

Rural Sociology

VOLUME 23

JUNE 1958

NUMBER 2

An Introductory Note on the Social Aspects of Practice

Adoption *Eugene A. Wilkening*

Toward Generalization in Farm Practice Research *James H. Copp*

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Consensus in Role Definition of County Extension Agents between the Agents and Local Sponsoring Committee Members
Eugene A. Wilkening

Official journal of the Rural Sociological Society

RURAL SOCIOLOGY

Published Quarterly

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RURAL SOCIOLOGY is published by the Rural Sociological Society. The office of publication is located in the Department of Rural Sociology, New York State College of Agriculture, a unit of the State University of New York at Cornell University, Ithaca, New York. Months of publication are March, June, September, and December.

Members of the Rural Sociological Society are entitled to receive RURAL SOCIOLOGY. Dues for active members are \$7.50 per year, of which \$6.00 is for a year's subscription to the journal. Dues for student members and emeritus members are \$4.00 a year, \$3.75 of which is for the subscription. Applications for membership and payment of dues should be made to the Secretary-Treasurer, Herbert F. Lionberger, Department of Rural Sociology, University of Missouri, Columbia, Missouri.

The subscription rate for nonmembers, libraries, and others is \$7.00 a year, \$2.00 a copy, in the United States and Canada; \$7.50 a year and \$2.15 a copy in all other countries, postage paid. Subscriptions should be sent to Managing Editor, 34 Warren Hall, Ithaca, New York.

Manuscripts and business correspondence should be addressed to the Managing Editor. Books for review, bulletins for review, and news notes and announcements should be sent directly to the appropriate departmental editor, as indicated above.

Application for re-entry as second-class matter is pending at Ithaca, N.Y. Application for additional entry at Geneva, N.Y., is pending.

Published under the supervision of Cornell University Press, Ithaca, New York

PRINTED BY THE W. F. HUMPHREY PRESS INC., GENEVA, NEW YORK

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RURAL SOCIOLOGY is indexed in *Agricultural Index*, *Bibliography of Agriculture*, and the bulletin of the *Public Affairs Information Service*. Selected abstracts are carried regularly in *Sociological Abstracts*, *Psychological Abstracts*, *Current Sociology*, and other publications. RURAL SOCIOLOGY is available on microfilm, to regular subscribers, from University Microfilms, 313 N. First Street, Ann Arbor, Michigan.

An Introductory Note on the Social Aspects of Practice Adoption

ABOUT fifteen years ago Charles Hoffer in Michigan and Bryce Ryan and Neal Gross in Iowa made the first studies of the acceptance of new farm practices.¹ Although these studies had been preceded by the work of M. C. Wilson and others² on the influence of extension methods upon the adoption of recommended farm practices, the Ryan and Gross study was the first attempt to test hypotheses derived from theories of cultural change. It placed emphasis upon the process rather than upon the influence of specific educational methods.

The papers presented in this issue of *RURAL SOCIOLOGY* are only a sample of the range of studies concerning acceptance or diffusion³ of innovations in agriculture. More than one hundred articles and monographs in this area of research have been published in the United States, and increasing numbers have appeared in other countries.⁴ This does not include many recent studies made by anthropologists and sociologists on technological change in the agricultural practices of

¹Charles R. Hoffer, *Acceptance of Approved Farming Practices Among Farmers of Dutch Descent* (Michigan Agr. Expt. Sta. Spec. Bull. 316; East Lansing, 1942); Bryce Ryan and Neal Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," *Rural Sociology*, VIII (1943), 15-24; and Bryce Ryan, "A Study of Technological Diffusion," *Rural Sociology*, XIII (1948), 273-285.

²M. C. Wilson, *Influences of Bulletins, News Stories and Circular Letters upon Farm Practices with Particular Reference to Methods of Bulletin Distribution* (USDA Ext. Cir. 57; Washington, D.C., 1927).

³The varying use of "acceptance" and "diffusion" as applied to this area of study reflects both historical precedence and differences in approach to the problem. Ryan and Gross used the term "diffusion" in their early papers, in which they were concerned mainly with the process. In later publications, in which they were concerned with individual variations within this process, they used the term "acceptance" or "acceptors." This distinction, though frequently blurred, has tended to hold in subsequent literature.

⁴North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *Bibliography of Research on Social Factors in the Adoption of Farm Practices* (Ames: Iowa State College, 1958).

other cultures.⁵ The articles here presented show the nature of the specialization in this area of study by rural sociologists in the United States.

Unfortunately, some of the most prolific writers about diffusion and acceptance of agricultural practices are not represented. Herbert Lionberger of the University of Missouri has continued to explore the problems of practice adoption and the use of informational sources both in extensive samples of farm operators and in intensive community studies.⁶ He has made contributions in a difficult aspect of study—the influence of informal groups and leaders upon practice adoption and information exchange among farmers. A. Lee Coleman, later joined by C. Paul Marsh of the University of Kentucky, has also been among the pioneers in this area of research.⁷ His studies have helped to define the role of communication channels in the diffusion process and have shown how differences in group norms influence the role of informal leaders in the adoption of new farm practices.

Joe M. Bohlen and George M. Beal and their students have carried on the early work of Ryan and Gross in Iowa on the diffusion process. Furthermore, they have done much for the "diffusion" of the findings of research by their effective presentations to many professional and lay audiences.⁸ H. A. Pedersen's studies of cultural differences in the acceptance of recommended farm practices in Wisconsin and later in Mississippi are also important contributions.⁹ Agricultural economists, too, have dealt with the personal and social factors influencing the acceptance of new farm technology.¹⁰

⁵I.e., Edward H. Spicer, *Human Problems in Technological Change* (New York: Russell Sage Foundation, 1952); *Human Organization*, official journal of the Society for Applied Anthropology; and Margaret Mead, ed., *Cultural Patterns and Technical Change* (United Nations Educational and Scientific Organization, 19 Avenue Kleber, Paris, 1953).

⁶"Some Characteristics of Farm Operators Sought for Sources of Farm Information in a Missouri Community," *Rural Sociology* XVIII (1953), 327-338; and "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," *Rural Sociology*, XIX (1954), 233-244.

⁷A. Lee Coleman, "Differential Contact with Extension Work in a New York Community," *Rural Sociology*, XVI (1951), 207-216; A. Lee Coleman and C. Paul Marsh, "Differential Communication among Farmers in a Kentucky County," *Rural Sociology*, XX (1955), 93-101; and C. Paul Marsh and A. Lee Coleman, "Group Differences and Agricultural Innovations: Some Tentative Findings and Hypotheses," *American Journal of Sociology*, LXI (1956), 588-594.

⁸North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *How Farm People Accept New Ideas*, North Central Regional Publ. No. 1 (Iowa Agr. Ext. Serv. Spec. Rep. 15; Ames, 1955).

⁹"Cultural Difference in the Acceptance of Recommended Practices," *Rural Sociology*, XVI (1951), 37-49.

¹⁰Rainer Schickele and John P. Himmel, *Socio-economic Phases of Soil Conservation in the Tarkio Creek Area: Economics of Agricultural Land Use Adjustments II* (Iowa Agr. Expt. Sta. Res. Bull. 241; Ames, 1938). Earl O. Heady, "Basic Economic and Welfare Aspects of Technological Change," *Journal of Farm Economics* (May,

The first paper by James H. Copp represents a stage in the maturation of research on farm practice acceptance. It is one of the first attempts to compare the results of studies conducted in different agricultural regions. Using data from Wilkening's study in Wisconsin and from his own study in Kansas, he developed comparable measures of certain personal, social, and economic variables. Despite the crudeness of some of the measures, Copp's paper shows quite clearly that farm practice adoption is a function of the nature of the farm enterprise and of the motivational complex of the farm operator. When these are taken into account, factors such as age, formal education, and formal social participation do not differentiate significantly between "low" and "high" adoption of recommended practices. Copp's findings suggest that adoption studies need to take into account the economic aspects of the farm enterprise on the one hand and the characteristics and motivations of the farm operator on the other.

The paper by Copp and others deals with the informational aspect of the acceptance of new farm practices. Basing their methods upon the general model developed by Bohlen, Coleman, Lionberger, Wilkening, and others,¹¹ the authors test certain specific notions about the function of information sources in the adoption process. They attempt essentially to specify the function of information sources in the adoption process. By asking a series of questions about the sources of information at various times, from the awareness of a new practice until its adoption, they find that institutionalized sources tend to perform a function separate from that of noninstitutionalized sources. In addition, the combination of sources used by most farmers tends to follow patterns which are comparable yet somewhat different for different types of practices.

The Pennsylvania study supports and adds to the findings of previous studies, including those of Beal and Rogers at Iowa. It shows that the mass media, the educational agencies, and the personal contacts of the farmer have somewhat specialized roles in the communication of information about new farm practices. There are limitations, however, to this type of study in understanding the process of change. The model for this as well as for most other practice adoption studies focuses upon the dependent variable of adoption. The hypotheses are tested with practices that are considered generally applicable and have been widely accepted. What about the many practices of limited applicability and those that are dropped by most farmers after a few years of trial? Also, there is the implication that adoption is the same as acceptance.

1949); C. V. Hess and L. F. Miller, *Some Personal, Economic and Social Factors Influencing Dairymen's Actions and Successes* (Pennsylvania Agr. Expt. Sta. Bull. 577; State College, 1954).

¹¹E. A. Wilkening, *The County Extension Agent in Wisconsin: Perception of Role Definitions as Viewed by Agents* (Wisconsin Agr. Expt. Sta. Res. Bull. 203; Madison, 1957).

Practices may be "accepted" without being "adopted" and, vice versa. More attention might be given to the knowledge and attitudinal counterparts of adoption such as "knowledge about," "favorableness toward," and "acceptance of" new practices.

For more complete understanding of responses to innovations, they must be studied as a function of the larger behavior complexes of the farmer, i.e., his life patterns, the farm enterprise, the family, agency programs, farmers' organizations, and informal cliques. It is within the larger pattern that specific acts of acceptance and nonacceptance take on meaning and are seen to be motivated and controlled. In his role as the operator of a farm, the farmer accepts or rejects a new practice if the practice gives security and status to him and his family as well as if it is profitable. At the same time he is concerned with his personal comfort, convenience, health, and other aspects of self-enhancement and self-satisfaction. These represent the goals or ends in terms of which practices on the farm or in the household are evaluated.

The study by Charles R. Hoffer and Dale Stangland is a worthy attempt to take into account the farmer's value orientations as they affect his adoption of practices. They show that farmers' reactions to projective-type statements reveal differences in their orientation toward security, progress, risk taking, and money making. These orientations distinguish between "low" and "high" adopters of a selected group of farm practices. Their findings suggest that a fruitful direction of research lies in the attempt to relate the farmer's perceptual as well as his more deep-seated personality orientations to adoption behavior.

As sociologists we should not limit our concern to an understanding of specific technological behavior. The range of technological behavior is so wide that we will not be able to make generalizations that apply much beyond the specific type of practice in a particular sociocultural setting. What needs to be taken into account is the personality, farm, familial, educational, community, and other systems as functioning units, with goals, norms, statuses, and roles defined to show how acceptance of innovations fits into these on-going systems.

The study by John C. Belcher suggests the need for such redirection in practice adoption research. He, as well as others, including the writer, have rather naively assumed that the adoption of health practices should be influenced by the same factors as are farm practices. Some health practices, especially those involving monetary considerations, appear to follow patterns similar to those of farm practices. This is the case in the Lowry, Mayo, and Hayes study in North Carolina. Yet even in this study there are findings, contrary to expectations, that certain health practices are not significantly associated with color and tenure. A breakdown of the types of health practices into those performed through public and through private facilities might have led to a more meaningful analysis. Also, the analysis of relationships

within color, tenure, and socioeconomic groups for both the North Carolina and the Georgia study would have helped to answer some questions left unanswered.

Belcher rightly seeks an explanation of differences in polio immunization between negroes and whites in the information contacts, agency relationships, and attitudes of the two groups. Had he not been hampered by the directions of previous research in farm practice adoption, he might have taken these as his point of departure rather than the traditional set of independent variables, and added more to our knowledge with less effort. However, his effort to explore the reasons for contrary findings is commendable and should suggest new directions for research.

Wilkening's paper dealing with consensus between county agricultural committee members and county extension agents as to the roles of the agents represents another direction of research growing out of the practice adoption studies. It reports part of a larger study of the variations in role definition of county extension agents.¹² The concern here is with one of the institutionalized change agents as a system of roles and his relationships with lay and other professional persons. The agents' views of their own roles are compared with the views of the local sponsoring body.

The study points up some of the problems of the institutionalized agencies in affecting change. As a voluntary educational agency which receives considerable local budget support, the Extension Service must conform to the expectations of those who are interested in, and take some initiative in, this type of service. For example, agricultural committee members feel that advising and working with groups and organizations in the county is a major function of extension agents, whereas many agents feel that such groups demand too much of their time for "chore" activities. Thus, the extension agent becomes part of a system of relationships growing out of expectations on local as well as on state and national levels, and much of his time and effort is spent in keeping the system going, with little awareness of how his efforts influence the total process of change.

The same is true for the agencies of mass communications and for commercial sources of information. Hence, there is need for study of the systems of communication and how their form and functions relate to the process of change.¹³ Although studies of the effects of techniques of communication and education are important, more study is

¹²E. A. Wilkening, "Roles of Communicating Agents in Technological Change in Agriculture," *Social Forces*, XXXIV (1956), 361-367.

¹³Francis R. Allen and others, *Technology and Social Change* (New York: Appleton-Century-Crofts, 1957). This collection of writings points up the nature of the problems of technological change in many areas; yet there is little attempt to provide a conceptual basis for their study.

needed of the clientele and the relationships of the systems of communication and influence to determine their role in technological change on the farm and in the home. Furthermore, we need to know the consequences of the functioning of these systems, particularly the ways in which persons and groups are assisted to seek new goals as well as to attain those already held.

It is hoped that the current interest in the social aspects of technological change will lead toward an understanding of the process of change in other areas of rural society. Many of the adjustments required in our society result from the rapid advance of technological change. But present research leaves almost untouched the problems of change in government, intergroup relations, and interpersonal relations. What are the processes of change in these areas involving directly the rights, duties, privileges, and feelings of people? It is likely that new concepts and methods of study will have to be developed for the study of these complex types of change. These are the areas in which rural sociologists must direct their efforts if we are to assist in attacking the crucial problems of today and tomorrow.

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JAMES H. COPP

Toward Generalization in Farm Practice Research*

Comparison of the findings from a sample of 157 cattlemen in Kansas with the findings from a sample of 177 dairymen in Wisconsin indicates that when similar concepts, measures, and statistical techniques are used the same variables may be important for explaining farm practice adoption behavior in different areas of the country and in different types of farm enterprises. Multiple correlation analysis in both sets of data suggests that the primary variables involved in adoption behavior are expressions of the size of the farm operating unit and the personality orientations of the farm operator toward his work.

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THE development of empirical generalizations in science is often slowed by dissimilarities among findings from different studies. This is as true for research in the adoption of recommended farm practices as for any other area of research. Here, as elsewhere, it is difficult to determine whether the dissimilarities spring from intrinsic differences in the populations sampled or from differences in the way the information was gathered, conceptualized, and analyzed. As a result, the synthesizer of empirical findings is hard put to explain why age may be a significant variable in North Carolina¹ but not in Wisconsin,² or

*This paper is based on research conducted by the writer while a member of the Department of Agricultural Economics at Kansas State College and, later, as a member of the Department of Rural Sociology at the University of Wisconsin. The research was supported by the Kansas Agricultural Experiment Station and the Wisconsin Agricultural Experiment Station, respectively. The writer wishes to acknowledge the computational assistance of the Statistical Laboratory at Kansas State College and the Numerical Analysis Laboratory at the University of Wisconsin. The Wisconsin data were made available for reanalysis through the generosity of E. A. Wilkening.

¹E. A. Wilkening, *Acceptance of Improved Farm Practices in Three Coastal Plain Counties* (North Carolina Agr. Expt. Sta. Tech. Bull. 98; Raleigh, 1952), pp. 45-46.

²Unpublished material analyzed by E. A. Wilkening in connection with his studies of farm practice adoption in Wisconsin.

why the size of the farm has a relation to farm practice adoption in Sauk County, Wisconsin, but not in Rock County, Wisconsin.

This paper attempts to move a step toward generalization in farm practice research through parallel analyses of two distinct sets of data by means of similar concepts, measures, and statistical techniques. Thus, the similarities or discrepancies that are found will be obtained under conditions where the analytical techniques and the frames of reference have been held relatively constant.

The generalizations drawn in this paper are admittedly provisional. It must be conceded that the occurrence of a statistically significant association between two variables in each of the two samples cannot be sufficient to establish a generalization; it can only lend greater plausibility to the generalization. Likewise, similarity in degree of association can hardly be regarded as a solid basis for generalization. The researcher can only argue that similar results obtained in samples drawn from divergent populations increase the scope of the generalizations.

In a dynamic society, however, all generalizations will be bounded by qualifications of time and place. The duration of time and the diversity of place for which the generalizations hold remain to be established. Similarities in the results from these two sample studies can do little more than widen the plausible area of generalization. That is, the findings from the two samples may make interpolation more certain, but extrapolation remains uncertain.³

DATA AND ANALYTICAL FRAMEWORK

The data were obtained from two samples drawn from quite different geographical regions, types of farming areas, and subcultural milieus; and it is believed that the resulting generalizations, though still tentative, will be of wider applicability than is usually possible. One sample consists of 157 beef producers in the Flint Hills grazing area of Kansas;⁴ the other sample consists of 177 southern Wisconsin dairy farmers, originally studied by E. A. Wilkening. The Kansas sample was more heterogeneous than the Wisconsin with respect to a number of economic and demographic characteristics; it included economic giants and dwarfs, as well as operators of all ages and of all types of family status. The Wisconsin sample, on the other hand, was restricted to individuals who were active owner operators, who were

³Arnold M. Rose discusses this problem in an essay, "Generalization in the Social Sciences," in his book, *Theory and Method in the Social Sciences* (Minneapolis: University of Minnesota Press, 1954), pp. 256-272.

⁴A detailed presentation of the results of the Kansas study are reported in *Personal and Social Factors Associated with the Adoption of Recommended Farm Practices among Kansas Cattlemen* (Kansas Agr. Expt. Sta. Tech. Bull. 83; Manhattan, 1956).

members of unbroken families, who had at least one child of high-school age at home, and who worked less than fifty days a year off the farm. Both samples were restricted in that they included only operators producing beef or milk for sale.

In both studies the adoption of recommended farm practices has been conceptualized as a latent behavioral predisposition which is manifested in the acceptance of specific recommended practices. Accordingly, in each sample the intercorrelations among the specific farm practices were subjected to a Hotelling method factor analysis⁵ to secure weights for an index of farm practice adoption.⁶ The resulting indexes, which could be treated as quantitative variables, permitted more precise analysis of relationships with other independent variables by means of such statistical techniques as product moment correlation and analysis of variance.

In each study the dependent variable, adoption of recommended farm practices, was correlated with a number of relevant economic and sociological variables, such as gross farm income, size of farm, number of cattle, age, education, social participation, and level of living. In addition, some attention was given to sociopsychological characteristics of the farm operators. Attempts were made to measure variables such as professionalism in farming, mental flexibility, and the ability to perceive structure in an initially unstructured situation.

In other words, adoption of recommended farm practices was conceptualized as a product of the farm operator's life situation, including such aspects as economic status, social position, and characteristic work orientations. However, one-way causation is not implied. The nature of the data does not permit the establishment of cause and effect relationships, even if one desired to establish them. It is theoretically conceivable that a high level of farm practice adoption will alter the farm operator's economic status, social position, and perceptual framework. The indeterminacy of the field theory approach⁷ of this paper will be rather disturbing to those desiring closure in their cognitive structures, but it is maintained that anything more than indeterminacy is not warranted by the cross-sectional nature of the data.

⁵Margaret Jarman Hagood and Daniel O. Price, *Statistics for Sociologists* (rev. ed.; New York: Henry Holt, 1952), pp. 523-547.

⁶Another instance of the same approach, and a strong justification for the approach, is given by Frederick C. Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," *Rural Sociology*, XXI (1956), 284-292. E. A. Wilkening appears to have been one of the first to utilize precise indexes for the measurement of adoption of practices.

⁷The notion of life situation and the reference to field theory are employed in a heuristic sense. A genuine theoretical dependence on field theory would be fraught with difficulties. See Floyd H. Allport, *Theories of Perception and the Concept of Structure* (New York: John Wiley, 1955), pp. 148-163.

RELATIONSHIPS OBSERVED

As for the relationships between the adoption indexes and selected characteristics of the farm operator (shown in Table 1), it is apparent that economic status, social position, and personality characteristics are relevant to farm practice adoption in both samples. The degree of correspondence in the size of the respective zero-order correlations in the two samples is quite striking. In no instance are there statistically significant differences between comparable correlations.⁸ These similarities lend support to the proposition that the same variables may be important for explaining adoption behavior in different areas of the country and for different types of farm enterprises.

Table 1. Comparison of correlations between selected variables and the farm practice adoption index in the Wabaunsee County, Kansas, and Rock County, Wisconsin, samples

| Variable | Zero-order correlations* | | Significance of differences between correlations |
|--------------------------------------|--------------------------|------------------|--|
| | Kansas sample | Wisconsin sample | |
| Gross farm income . . . | .59 | .56 | n.s. |
| Acres of cropland . . . | .36 | .28 | n.s. |
| Size of herd | .52 | .43 | n.s. |
| Age | -.24 | -.23 | n.s. |
| Formal education . . . | .34 | .19 | n.s. |
| Level of living | .42 | .34 | n.s. |
| Social participation . . | .52 | .38 | n.s. |
| Professionalism† . . . | .61 | .24 | — |
| Member in farm organizations | .48 | .58 | n.s. |
| Mental flexibility‡ . . | .46 | — | — |
| Discerning ability . . . | — | .42 | — |

*All correlations are significantly different from zero at the .05 probability level.

†The items in the Kansas and Wisconsin professionalism scales are not comparable.

‡The mental flexibility measure was secured in Kansas only and the discerning ability measure in Wisconsin only. Although the latent variables tapped are believed similar, direct comparison of the two measures is not justifiable.

⁸R. A. Fisher, *Statistical Methods for Research Workers* (11th ed., rev.; New York: Hafner, 1950), pp. 203-204.

Economic status: The correlations in Table 1 argue strongly for the importance of economic status in adoption behavior. The size of the operating unit is important; but the gross returns from the unit are even more highly correlated with adoption.⁹ Results of this nature indicate that no theory of farm practice adoption can ignore the farm operator's scale of operations and productivity.

Social position: This study, as well as many others, indicates the relevance of the farm operator's social characteristics for adoption behavior. The farm operator's place in the social structure as indicated by his age, education, level of living, and activity in community affairs is definitely associated with his adoption behavior. Apparently, *who the farmer is* may be closely entwined with *what he does*. Rural sociologists have frequently demonstrated the importance of these social characteristics for adoption behavior, probably at the cost of overlooking the economic and personality characteristics that may also be involved.

Personality variables: In the realm of personality characteristics, the measures are less standardized and are more suggestive of research possibilities than of established research results. In general, the measures have been improvised from data gathered with other purposes in mind. These measures are difficult to compare from one sample to the other because they were composed from different items or from similar items measured somewhat differently.

In the Kansas sample, a cluster of five items was found which fit the Guttman scale model quite precisely.¹⁰ These items reflected a professional attitude on the part of the farm operator toward his occupation. The items are membership in a farm organization, contact with the county agent, attendance at an annual college feeders' day, favorable evaluation of the college and of the Extension Service, and confidence in extension recommendations before local demonstration. These items yielded a scale with a high coefficient of reproducibility, .95. The correlation of this scale with the adoption index was .61, significant at the .001 probability level.

Although a number of items in the Wisconsin data appeared to tap the same dimension, they did not meet the criteria for scale analysis. Intercorrelation of the items failed to show as high a degree of overlap between the items as in the Kansas sample. Since one item, membership in farm organizations, was much more highly correlated with the adop-

⁹In both the Kansas and Wisconsin samples a small negative partial correlation was observed between the adoption index and the size of the operation, holding gross income constant. In other words, adoption of farm practices is correlated with productivity per unit. Productivity per unit of size was calculated for the Wisconsin data and found to be correlated .36 with the adoption index.

¹⁰Samuel A. Stauffer et al., *Studies in Social Psychology in World War II*, Vol. IV, *Measurement and Prediction* (Princeton: Princeton University Press, 1950), pp. 3-212.

tion index than the other items, it was treated as a separate measure of professionalism in the Wisconsin analysis. The remaining professionalism items were combined into an arbitrary index. This index was composed of the following items: use of nonlocal sources of farm information, favorable attitude toward vocational agriculture education, and confidence in extension recommendations before local demonstration. Thus, instead of one professionalism scale, there were two measures of professionalism, neither directly comparable with the Kansas scale.

The fact that items supposedly reflecting a professional view toward farming scaled in one set of data and did not scale in the other raises some disturbing questions about the professionalism measure developed from the Kansas data. The fact that the scale could not be replicated was a negative, but valuable, result from the Wisconsin analysis. Either the items in the two samples were not sufficiently similar or the close approximation to the scale model in the Kansas data was due to local conditions.

The Kansas data contained another cluster of items that conformed to the Guttman scale model. This cluster seemed to express mental flexibility in the farm operator's orientation to his work. Some farmers tended to take a rational problem-solving approach to their work, whereas others tended to approach their work in terms of traditional formulas such as keeping on the job, not running around too much, or working hard. Three items tapped this dimension: emphasis on farming as a problem-solving situation, attitude toward the future in farming, and attitude toward credit. These three items yielded a scale with a coefficient of reproducibility of .92. A correlation of .46, significant at the .001 probability level, was obtained between this limited scale and the adoption index.

The Wisconsin data did not permit a duplication of the mental flexibility scale. However, material collected for other purposes was exploited in an attempt to infer a measure of the farm operator's ability to deal with abstract problems. An arbitrary index was constructed from a number of questions that required the respondent to perceive structure in an initially ambiguous situation. This makeshift measure has been provisionally labeled an index of discerning ability. It was constructed on the basis of the number of times a respondent answered "Don't know" to evaluative questions about various farm practices and on the basis of the degree of rationality shown in patterns of rankings given to two questions about goals in farming and goals in family and home life. This index yielded a correlation of .42, significant at the .001 probability level, with the adoption index.

Although it was impossible to duplicate measures of mental flexibility or discerning ability in the two samples, it can be said that two attempts have been made to measure a psychological factor in farm

practice adoption, and that in both cases the results have shown a reasonably high correlation with the adoption index. Definite reservations can be raised about the precision of the measures; but, on the other hand, it would seem that the value of giving more detailed study to the field of personality in farm practice research has been amply demonstrated.

MULTIPLE CORRELATION ANALYSIS

Following the correlation of selected variables of the farm operator's life situation with the adoption index, an attempt was made in both samples to study the multiple relationship of the independent variables with the adoption index. The objective was to identify a limited number of variables which would account for a maximum amount of variance in the adoption index.

This objective has practical as well as theoretical value. There is little reason for dealing with a large number of variables when a few variables will do the predictive job as well. Furthermore, one of the goals of science is to secure a parsimonious summary of a system of relationships. In the development of empirical generalizations in farm practice research, some form of reduction in the number of variables is imperative.

Multiple correlation analysis, though not the only technique available, seemed to be the best method, in this instance, for studying the relationship of a combination of independent variables with the dependent variable. This is particularly true where the variables are of a quantitative nature, as in the present instance. The analysis in both samples was facilitated by the normalization of each variable to correct for unequal intervals between categories, as well as for skewness in some of the economic variables.¹¹

Several multiple correlation analyses were undertaken in each sample in order to determine the minimum set of variables which would summarize the interrelationships observed. Variables were discarded if their inclusion in the multiple correlation failed to contribute a significant increment to the explained variance.¹²

In the Kansas data, eight independent variables were subjected to multiple correlation analysis. The variables were gross farm income, total acreage operated, number of beef cattle, professionalism, mental flexibility, formal education, age, and social participation. Of these, only the first five variables contributed significant increments to the explained variance. When the first five variables were taken into

¹¹Techniques for normalizing are described in Charles C. Peters and Walter R. Van Voorhis, *Statistical Procedures and Their Mathematical Bases* (New York: McGraw-Hill, 1940), pp. 399-402, and in W. A. McCall, *Measurement* (New York: Macmillan, 1939), pp. 505-508.

¹²R. L. Anderson and T. A. Bancroft, *Statistical Theory in Research* (New York: McGraw-Hill, 1952), pp. 201, 177-182.

account, neither formal education, age, nor formal social participation contributed a significant increment to the explained variance. Of the five variables, which together accounted for approximately 50 per cent of the variance in the adoption index, gross farm income, professionalism, and mental flexibility accounted for the major part of the explained variance. The additional contributions of total acreage and number of cattle were small, though statistically significant.

In the Wisconsin data, ten independent variables were subjected to multiple correlation analysis. The variables were gross farm income, farm organization memberships, discerning ability, level of living, age, formal education, professionalism, formal social participation, crop acreage, and size of herd. Of these, only the first four variables, gross farm income, membership in farm organizations, discerning ability, and level of living contributed significant increments to the explained variance. The increment contributed by age was almost significant at the .05 probability level. When the first four variables were taken into account, other variables, such as formal education and formal social participation, failed to contribute statistically significant increments to the explained variance. Of the four variables that together accounted for 52 per cent of the variance in the adoption index, gross farm income, membership in farm organization, and discerning ability contributed much more weight than level of living.

DISCUSSION

The results of the multiple correlation analyses in the two samples were in agreement in showing that measures of economic productivity and personality variables were of outstanding importance in accounting for variance in the quantitative measures of farm practice adoption. In both samples, the variables describing the social position of the operator (such as age, formal education, level of living, and social participation) were of minor importance when the economic and personality variables had been taken into account.

The results of the analysis of the data in the two samples suggest that there is a basis for attempting generalizations in farm practice research and that these generalizations may apply in widespread areas of the country and among occupational groups as divergent as cattlemen in a rural, semiarid region in Kansas and dairy farmers in an urbanized, humid region in southern Wisconsin. The prognosis for widespread empirical generalizations in farm practice research appears good when data gathering and techniques of analysis are somewhat standardized. However, the temporal and spatial limits for these generalizations remain to be determined.

The results of the multiple correlation analyses in the two samples point out the need for expansion of farm practice research into economic and personality spheres. The results suggest the need for investi-

gations of managerial strategy, efficiency, and capital accumulation, as well as voluntary and involuntary credit rationing. The research also suggests the value of studying the farm operator's self-perceptions, his ability to deal with problem-solving situations, and his mental flexibility, as well as other facets of his personality. Furthermore, the results of this study, embodying something of a field theory approach, make only a limited contribution to a strong empirical theory of the adoption of recommended farm practices couched in terms of "if *a*, then *b*" propositions. Granted, many of the relationships are of a reversible nature. For example, a certain scale of operations, as reflected by gross farm income, is necessary to justify the adoption of many practices; but, on the other hand, many practices are recommended because they do increase farm income. Longitudinal studies of farm operators over time would be of great value in setting up propositions of the type "if *a*, then *b*." If this study has made a contribution, that contribution lies more in the isolation of the variables or areas which may be involved in the "if *a*, then *b*" propositions.

Finally, the results of this study have implications for the work of those who are promoting better farming methods. The results suggest that straightforward, rational exhortation to adopt recommended farm practices is of limited success because it fails to take into account the limitations imposed by economic status and by the farm operator's personality orientations.¹³

¹³These implications would support the individual approach now being emphasized by the Agricultural Extension Service in its Farm and Home Development Program.

CHARLES R. HOFFER and DALE STANGLAND

Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing

A survey was made of 93 Michigan farmers who grew five or more acres of corn in 1955. The purpose was to find out if they used certain approved practices in corn growing and, if they did not, what was the reason for their failure to do so. Special attention was given to attitudes and values in relation to the adoption of a practice. The results showed that if a farmer was efficient, had initiative, and was progressive, he was likely to adopt approved practices. On the other hand, if he tended to be conservative and valued security highly, he would postpone the adoption of a practice or possibly never adopt it.

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THE failure to adopt an approved practice in farming is a matter of considerable practical importance not only to agricultural extension workers and the public but also to the farmers themselves. Since approved practices have been tested and have proven to be remunerative, it seems evident that the profit motive alone is not sufficiently effective as a motivating influence for adoption. A broader, more comprehensive explanation of behavior is needed.

Studies already completed have shown that with few exceptions farm ownership, education, income, size of farm and social participation are positively associated with adoption.¹ Information about age is inconclusive, though a recent study by Anderson indicates that younger farmers are more likely to adopt a new practice.² Some evi-

¹Subcommittee of the Rural Sociological Society, *Sociological Research on Diffusion and Adoption of Farm Practices* (Kentucky Agr. Expt. Sta. RS-2; Lexington, June, 1952).

²Marvin A. Anderson, *Informational Sources Important in the Acceptance and Use of Fertilizer in Iowa* (Report No. P55-1, Knoxville, Tenn.: Division of Agricultural

dence indicates that ethnic background influences the adoption of practices.³ Neighborhood norms, too, seem to be important, for one study has shown that in areas favorable to new techniques there is a higher rate of adoptions than in those areas less favorable to them.⁴

In the research reported in this paper an attempt was made to find whether any relationship exists between the attitudes and values of the farmer and his readiness to adopt an approved practice. A few studies from this point of view have been done. Irving A. Spaulding has studied the farmers' time-space orientations and the adoptions of recommended farming practices.⁵ A statistical analysis of selected personal and social factors associated with adoption of recommended farming practices was made by James H. Copp. He found that the degree of acceptance of professional and scientific values in farming and flexibility of the farmer's mental approach to problems of farm operation were related to adoption of recommended practices.⁶

The study reported here was limited to corn-growing practices. Information was obtained by the interview method from a sample of 93 Michigan farmers who grew five or more acres of corn in 1955. Corn is an old crop, and hence methods of corn growing were well established in the culture long before scientific agriculture developed. On the other hand, much research has been done to improve the production of corn. Four practices, namely, soil testing, increased amount of fertilizer at planting time, minimum tillage, and increased number of plants per acre, were studied intensively in this research. Questions about an additional practice, side dressing with nitrogen, were asked, but this practice was not adopted extensively enough to permit detailed analysis of its use. On the other hand, the practice of "rotation of crops—legumes before corn"—was so generally established in the beliefs and habits of these farmers that they used it without question. If a farmer did not give a rational explanation for crop rotation, he would simply say it was the thing to do or it had always been done. Practically all the farmers knew about these practices. Three-fourths of the total regularly followed the practice of rotation, about two-fifths

Relations, Agricultural Economics Branch, Tennessee Valley Authority, in co-operation with Agricultural Extension Service, Iowa State College, Ames, Iowa, April, 1955.

³See Charles R. Hoffer, *Acceptance of Approved Practices Among Farmers of Dutch Descent* (Michigan Agr. Expt. Sta. Spec. Bull. 316; East Lansing, June, 1942); and H. A. Pedersen, "Acculturation among Danish and Polish Ethnic Groups in Wisconsin" (Ph.D. thesis, University of Wisconsin, 1949).

⁴Paul Marsh and A. Lee Coleman, "Group Influences and Agricultural Innovations: Some Tentative Findings and Hypotheses," *American Journal of Sociology*, LVI (1956), 588-594.

⁵*Farm Operators' Time-Space Orientations and the Adoption of Recommended Farming Practices* (Rhode Island Agr. Expt. Sta. Bull. 330; Kingston, June, 1955).

⁶*Personal and Social Factors Associated with Adoption of Recommended Practices among Cattlemen* (Kansas Agr. Expt. Sta. Tech. Bull. 83; Manhattan, Sept., 1956).

of the total used increased amounts of fertilizer at planting time, and one-fourth increased the number of plants per acre.

The attitudes and beliefs of these farmers regarding the various practices considered in the study were indicated by comments the farmer made when the interview occurred. In general these statements reflected degrees of acceptance of a practice on a continuum from mere awareness to adoption. Five classifications were used: (a) awareness, indicating that the farmer had merely heard about the practice; (b) interest, statements indicating that the farmer was interested but had not thought about the practice sufficiently to make a judgment regarding it; (c) evaluation, remarks which showed that the farmer had thought about the matter and had decided either in favor or against the practice; (d) trial or experiment, assertions that the practice was being used on a trial basis; and (e) adoption, statements indicating that the practice was being used regularly.⁷

Conclusions based on an analysis of the statements these farmers made indicated that the newer the practice the more doubts the farmer had concerning it. An illustration is side dressing with nitrogen. This did not resemble any other practice, and in order to apply the nitrogen in liquid form the farmer would have to purchase equipment or hire a commercial firm to apply it. On the other hand, if new practices did not differ markedly from practices already being used, the farmers were much more likely to adopt them or at least to experiment with them.

A tabulation of the statements by these farmers was made to determine if the attitudes of the farmer were the principal deterring factor in adoption or if some other circumstance, such as a unique condition on the farm, might be the reason. These tabulations are summarized in Table 1. The results showed that for soil testing, increased amount of fertilizer at planting time, and increased number of plants per acre, the attitudes of the farmers were the most frequent explanation. In the case of minimum tillage the type and condition of the soil on the farm was given most frequently as the reason for rejecting the practice. Many farmers thought this practice would not be successful with the kind of soil they had.

Another purpose of the study was to seek information about the relationship between the adoption of approved practices and the values a farmer might have. Definitive information about values is admittedly difficult to obtain. It is possible, however, with the survey method to get sufficient information about values to determine their probable relationship to the adoption of approved practices. The procedure used

⁷This classification is based on one presented in North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *How Farm People Accept New Ideas* (North Central Regional Pub. No. 1; Iowa Agr. Ext. Serv. Spec. Rep. 15; Ames, 1955).

Table 1. Classification of statements made by farmers regarding approved practices

| Practice | Reasons for adopting or not adopting a practice | | |
|--|--|-----------------------|-----------------------|
| | Attitudes of farmer | Conditions on farm | Nature of practice |
| Soil testing | 27 | 2 | 0 |
| Increased amount of fertilizer at planting time | 21 | 2 | 3 |
| Minimum tillage | 4 | 11 | 1 |
| Increased number of plants per acre | 11 | 0 | 1 |

to gain an indication of values was to ask the farmer to respond to a series of statements or models about farmers and farming without reference to any values whatever. Each statement was read to the informant, and he was asked if he thought he was like the individual described in the statement, somewhat like him, neither like nor unlike him, somewhat unlike him, or, finally, unlike him. Following are the statements that were used. They were designed to serve only as a means of indicating a value a farmer might have. It is the pattern of behavior and its implications, not the economic connotations of the statement, which is important in this research.

Statement (a): Henry Smith has made good money farming. He checks each purchase and change in his farming operation to see whether or not it will pay. He knows just when to sell his crops and livestock in order to make the most money.

Statement (b): If there is a possibility of making a good profit, Dave Smith doesn't mind taking a large risk on a farming enterprise. Although it cost him a lot of money, he enlarged his farming operation last year. He felt this would enable him to make much more money. If prices remain the same for a few years, he will make more money.

Statement (c): John Brown has to drive a new car every year. The Browns also have a new washer and dryer. They were among the first to have a TV set.

Statement (d): Albert Black needs to make some improvements for

the farm. It would be possible for him to get a mortgage to make the improvements. He decided to wait a few years. He knows that he can pay it off in three years. He has decided against this, however, as he doesn't believe in mortgages.

Statement (e): John Smith wouldn't borrow money from the bank even though his credit is good. By increasing his cash investment he thought he would be able to double his production within two years, but because he doesn't believe in borrowing operating capital he didn't make the investment.

When the information pertaining to the responses the farmers made to these statements was tabulated, each of the models was designated by a term (or phrase) indicating a certain value. Thus, statement (a) was judged to indicate efficiency; (b), willing to take risk (self-reliance); (c), progress; (d), security; and (e), conservatism. It was assumed, if the farmer said he was like or somewhat like the one described in the statement, that his behavior, so far as adoption of practices was concerned, would be influenced by the value it suggested.

A summary of the farmers' responses to these statements, showing how they identified themselves with the hypothetical persons described, follows.⁸

| <i>Statements</i> | <i>Number of farmers</i> |
|------------------------------|--------------------------|
| (a) Efficiency | 45 |
| (b) Willingness to take risk | 38 |
| (c) Progress | 31 |
| (d) Security | 60 |
| (e) Conservatism | 29 |

No objective tests were made to determine whether the farmer had or did not have the qualities being considered. He stated that he was like or somewhat like the hypothetical farmer or unlike him. His judgment of the matter was accepted for the purposes of this research. The correctness of his judgment is indicated to some extent, however, by comments he made in response to the questions. His comments tended to substantiate his judgment.

There was a tendency, as the totals listed suggest, for many of these farmers to agree with the statement prizing security, even though they identified themselves with other models which seemingly might be inconsistent with it. For example: Twenty-five of the forty-five farmers who thought they were like the hypothetical efficient farmer also thought they were like the farmer whose behavior illustrated security. These relationships suggest that security (as described in the hypothetical statement) was considered to be a general value which these informants were inclined to endorse. As the totals suggest, this tendency did not prevail to the same extent with the other models con-

⁸Since a farmer might identify himself with more than one model the total number of farmers exceeds 93.

sidered in the study. Only ten of the twenty-nine farmers who identified themselves with conservatism also identified themselves with efficiency. If a farmer identified himself with efficiency, there was a tendency to identify with willingness to take risk and progress, but not with conservatism.

The next step in the analysis was to determine if a relationship existed between the identification of the farmer with a statement indicating a value and adoption of each of the approved practices. The results of this inquiry are presented in Table 2. The figures indicate that the newer practices (soil testing, increased amount of fertilizer at planting time, minimum tillage, and increased number of plants per acre) were adopted by a higher percentage of the farmers who identified themselves with the farmer whose behavior indicated efficiency than did the farmers who said they were not like him. This relationship tends to exist also for the statement indicating willingness to take risk and with only minor exceptions for the farmers who thought they were like the hypothetical farmer whose behavior suggested progress. On the other hand, the reverse was true for these practices among farmers who identified themselves with conservatism. It is concluded, therefore, that farmers who are efficient, willing to take risk, and progressive, as here designated, tend to adopt approved practices. Those

Table 2. Percentages of farmers adopting approved practices who said they were like or somewhat like the farmer in the hypothetical statements and the percentages who believed they were not like or somewhat not like him

| | Like or somewhat like | Not like or somewhat not like | χ^2* | d.f. | P. |
|--|-----------------------------|-------------------------------------|-----------|------|----|
| <i>Statement (a) Efficiency</i> | | | | | |
| Number of farmers | (45) | (36) | | | |
| Soil testing | 36 | 18 | 2.752 | 1 | |
| Increased amount of fertilizer at planting time | 71 | 45 | 7.091 | 1 | -† |
| Minimum tillage | 18 | 9 | 1.834 | 1 | |
| Increased number of plants per acre | 69 | 43 | 8.746 | 1 | - |

*Chi-square tests are computed on the basis of the following formula taken from M. J. Hagood and D. O. Price, *Statistics for Sociologists* (New York: Henry Holt, 1952), p. 365: $\chi^2 = \sum \frac{(fo - fe)^2}{fe}$. Yates's correction was used for all computations with one degree of freedom.

†A dash (-) indicates that the chi square is significant at the .05 level.

Statement (b) Willingness to take risk

| | | | | |
|--|------|------|-------|---|
| Number of farmers | (38) | (48) | | |
| Soil testing | 30 | 22 | 0.045 | 1 |
| Increased amount of fertilizer at planting time | 66 | 42 | 1.116 | 1 |
| Minimum tillage | 19 | 8 | 1.235 | 1 |
| Increased number of plants per acre | 60 | 42 | 2.310 | 1 |

Statement (c) Progress

| | | | | |
|--|------|------|-------|---|
| Number of farmers | (31) | (57) | | |
| Soil testing | 33 | 17 | 2.305 | 1 |
| Increased amount of fertilizer at planting time | 71 | 50 | 3.507 | 1 |
| Minimum tillage | 9 | 14 | 0.073 | 1 |
| Increased number of plants per acre | 61 | 41 | 2.304 | 1 |

Statement (d) Security

| | | | | |
|--|------|------|-------|---|
| Number of farmers | (60) | (29) | | |
| Soil testing | 25 | 31 | 0.267 | 1 |
| Increased amount of fertilizer at planting time | 45 | 59 | 0.990 | 1 |
| Minimum tillage | 13 | 14 | 0.021 | 1 |
| Increased number of plants per acre | 41 | 55 | 1.608 | 1 |

Statement (e) Conservatism

| | | | | |
|--|------|------|-------|---|
| Number of farmers | (29) | (59) | | |
| Soil testing | 17 | 26 | 0.354 | 1 |
| Increased amount of fertilizer at planting time | 44 | 61 | 1.408 | 1 |
| Minimum tillage | 9 | 14 | 0.004 | 1 |
| Increased number of plants per acre | 34 | 55 | 2.245 | 1 |

who value security highly and are conservative delay or fail entirely to adopt a new practice.

In order to test further the relationship between values with which the farmer identifies himself and the adoption of approved practices, a tabulation was made using only the farmers who said they were like the hypothetical farmer. (The tabulations in Table 1 included farmers who said they were like or somewhat like the hypothetical farmer.) The results of this investigation are presented in Table 3.⁹ Again the same relationships that were found in the preceding table are evident. The percentages for farmers who identified themselves with the model indicating efficiency were highest for soil testing, increased number of plants per acre, and increased amounts of fertilizer at planting time. Conversely, those farmers who identified themselves with the model indicating conservatism tended to have the lowest percentage of adoptions of the various practices.

Table 3. Percentages of farmers who said they were like the hypothetical farmers indicating selected values and who adopted approved practices

| Values indicated | Efficiency | Willingness to take risk | Progress | Security | Conservatism |
|--|------------|--------------------------|----------|----------|--------------|
| Number of farmers who said they were like the hypothetical farmer | | | | | |
| | 23 | 23 | 15 | 36 | 16 |
| Percentages | | | | | |
| Soil testing | 44 | 22 | 20 | 16 | 12 |
| Increased amount of fertilizer at planting time | 79 | 61 | 66 | 47 | 44 |
| Increased number of plants per acre | 60 | 48 | 46 | 46 | 26 |

It would seem, judging by the findings of this study, that the means of communicating information about approved practices to the farmers included in the sample were reasonably effective. Almost all of them

⁹Minimum tillage was not included in Table 2 because the number of farmers reporting this practice in any category was very small.

had heard about the practices. Assuming that the soil and other characteristics of the farm were favorable and that the type of farming made a practice feasible and profitable, the attitudes and values of the farmer himself seem to be the determining influence in the adoption of the practice. In general if a farmer is efficient, has initiative, and is progressive, he is likely to adopt approved practices. On the other hand, if he is conservative and values security highly, he is likely to postpone adoption of a practice or may never adopt it.

ALFRED DEAN, HERBERT A. AURBACH,
and C. PAUL MARSH

Some Factors Related to Rationality in Decision Making among Farm Operators*

The research reported in this paper attempts to investigate the relationship between certain sociocultural variables which have classically been related to the adoption of recommended farm practices and "rationality" in decision making. "Rationality" is conceptualized as a variable intervening between the operation of the sociocultural variables and the act of adoption. The data lend support to this framework. The observed relationships between rationality and the selected variables are those which have been found to obtain with respect to adoption.

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IN the spring of 1956, 547 farm operators in eight counties of North Carolina were interviewed in the first phase or bench mark of a study aimed at the evaluation of the Farm and Home unit approach to agricultural extension work in North Carolina.¹ At the same time a number of questions were included in the schedules to collect exploratory data on social and social psychological aspects of decision making in farm management.² A preliminary investigation of responses to a number of the open-ended questions revealed one major fact—the kinds

*This paper is published with the approval of the director of the North Carolina Agricultural Experiment Station as paper No. 865 of the Journal Series.

¹This study is supported jointly by funds from the W. K. Kellogg Foundation; and the North Carolina Agricultural Experiment Station and the Cooperative Extension Service, North Carolina State College.

²The authors gratefully acknowledge the participation of Dr. Frederick L. Bates, now at Louisiana State University, in the formulation of these questions.

of information and the sources of influence that were the bases for decision varied considerably. If one postulated that the primary objective of such managemental decision making was economic gain, it was clear that the criteria by which decisions were being made varied dramatically in terms of their probable efficacy to this end.

The question as to whether or not there was any underlying pattern of decision making was one that appeared to have considerable theoretical as well as practical import. Considerable research has already revealed the importance of social factors to the diffusion and acceptance of recommended farm practices and agricultural innovations.³ Such studies have implications beyond these rather specific processes. They suggest the operation of social variables in the great range of decision-making situations in farm management. The delineation of empirical regularities in the decision making of the sample was thus viewed as a desirable objective, and it appeared that the data possessed potential toward the exploration of certain facets of this goal.

Subsequent analysis of the data showed that the qualitative material could be coded into a small number of categories, which appeared to be a demonstration of certain regularities in the decision-making process. The major sociological question which now arises is "Can these response categories be theoretically and/or empirically related to social factors?" The objectives of the larger study provided for collecting data on certain sociocultural variables. An investigation of relationships between the selected variables and the response categories thus seemed to be empirically possible. Furthermore, these variables have classically been related to the adoption of farm practices recommended by agricultural educational agencies in previous studies.

It has been indicated that the most obvious generalization which could be made from the data was that the quality of decision making varied with respect to its probable efficacy to postulated economic objectives. In other words, the quality of means employed varied in terms of judiciousness and appropriateness, or "rationality." A number of items in the interview schedule appeared to measure essentially the same quality or dimension—the rationality of decision making.

THE RATIONALITY INDEX

Nine questions were thus combined into a "rationality index" and

³The reader is referred to the following bibliographies, which list the major publications on the acceptance of farm practices: Subcommittee on the Diffusion and Adoption of Farm Practices of the Rural Sociological Society, *Sociological Research on the Diffusion and Adoption of New Farm Practices* (Kentucky Agr. Exp. Sta. RS-2; Lexington, June, 1952); National Project in Agricultural Communications, *Research and Writing on Diffusion of Farm and Home Practices* (East Lansing: Michigan State University, March, 1956); North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *Bibliography of Research on Social Factors in the Adoption of Farm Practices* (Ames: Iowa State College, April, 1956).

the responses to these questions were placed on a three-point scale of rationality. Five of these questions were open-ended, and four were of the forced-choice variety. Categories were developed to code the responses to the open-ended questions. The items combined into the index, as well as the rationality weights assigned to the response categories, were achieved by the consensus of a board of judges consisting of the faculty of the Department of Rural Sociology of North Carolina State College. The judges were asked to make their evaluation on the basis of a working definition which stated that "*rationality*" involves the use of deliberation, planning, and the best available sources of information and advice in arriving at decisions as a means of achieving maximum economic ends.

It should be made explicit that the original research questions were not structured deliberately to elicit responses relevant to measuring the rationality dimension, which was subsequently defined and measured. They were designed rather to gather exploratory data on decision-making processes and to stimulate the development of hypotheses, theory, and methodological approaches to such processes. The operational and theoretical framework presented here were, indeed, stimulated by the data and by previous research findings.

The rationality index as finally developed is presented in Table 1.

Table 1. Rationality index

Code: 3 = Rational; 2 = Intermediate; 1 = Nonrational; Y = Does not apply.

1. How did you decide how much fertilizer to apply to your corn last year?
 3. —according to soil test
 - followed the general recommendations of government authorities and/or professionals
 - according to careful observation in trial-and-error-like procedures of a fairly scientific nature; critical observation, recording of data, etc.
2. —on the basis of general knowledge or experience (general, vague)
 - followed the recommendations or practices of family, relatives, or other farmers
 - from recommendations of commercial interests (other than those from mass media; e.g., salesman)
 - according to information gained through mass media
1. —don't know
 - always used same amount or same as last year, etc.
 - used what he had on hand

Y. —used what landlord sent
—not codable, ambiguous

2. Have you had any of your fields soil tested in the last five years?

3. —yes
1. —no
—don't know

Y. —not codable, ambiguous

3. How do you decide how much corn to plant?

3. —plants what is needed to feed livestock
—plants according to market conditions
—for soil conservation practices, rotation, etc.
2. —plants according to government regulations
—plants according to general needs
1. —always plants same amount
—don't know
—plants residual land in corn

Y. —decided by landlord or other factors beyond his control
—not codable, ambiguous

4. Why did you plant this variety(ies) instead of some others?

3. —followed recommendations of government authorities or professionals
—chose to meet specific problems (e.g., disease, climate)
—according to his conception of the market (e.g., "companies want it" or "it earns more money")
—because of special qualities of the tobacco, other than those listed above (e.g., curing properties, high yield)
—to experiment with a new variety
2. —recommendations of relatives, neighbors, and other farmers
—followed recommendations of commercial interests
1. —don't know

Y. —decided by landlord or other factors beyond his control
—not codable, ambiguous

5. What kinds of written records do you keep and what things do you keep them on?

3. —farm books

- ledgers or other records
- DHIA or other production records
- records of expenditures and income

2. —receipts, checks
—bills and/or sales

1. —don't know or none (uses memory)

Y. —not codable, no response

6. How do you use these written records?

- 3. —to estimate profits and loss of entire farming operation
- input analysis of specific enterprises
- to aid in the improvement of practices

2. —to figure income tax and/or social security

1. —don't know

Y. —not codable, ambiguous

7. Have you ever tried to figure out on paper what your profit was from any major crop or livestock enterprise on your farm?

- 3. —yes
- 1. —no
—don't know

Y. —not codable, ambiguous

8. The difference between the successful farmer and the nonsuccessful one is more in how hard they work than in how much time they spend in planning their farming operations.

- 3. —disagree
- 1. —agree
—don't know

Y. —no response

9. Farmers really don't have to think a great deal about what they are going to do on their farms since this is largely decided for them by their land and by what kind of farming their neighbors do.

- 3. —disagree
- 1. —agree
—don't know

Y. —no response

Respondents who answered less than six out of the nine index items were eliminated from the sample. This reduced the size of the sample to 498 cases. Respondents who had answered at least six but less than nine questions were given scores based on their average score to questions answered.

THEORETICAL CONSIDERATIONS

Considerable research has consistently demonstrated relationships of sociocultural variables to the adoption of farm practices recommended by agricultural educational agencies. The interpretation of such findings frequently involves postulating the relationship of the sociocultural variables to other variables such as values, aspects of motivation, and primary group relationships. These variables or processes are frequently viewed as the social phenomena to which the statistical associations are only clues.

It is possible to conceptualize these variables or processes as impinging upon a variety of decision-making processes involved in farm management. Indeed, such a conception is often implicit in the diffusion literature. It is possible, furthermore, to view these variables as affecting, in some manner, the rationality of decision making as an intervening variable. In such a framework, "to adopt" or "not to adopt" is only one of the questions on decision making which confront the farmer and to which he can respond with some variable degree of rationality. These relationships are depicted in Figure 1.

If we assume that the adoption of a recommended farm practice is usually a rational act, we may hypothesize that adopters tend generally to be more rational than nonadopters. An extension of this hypothesis would lead us to hypothesize further that the associations which have been found between certain sociocultural variables and adoption should obtain also with respect to general rationality in decision making.

The working definition of rationality possesses several theoretical characteristics requiring further consideration.⁴ In the first place, rationality is defined in terms of a means-ends schema; i.e., an act is rational to the extent that it is likely to be effective toward the achievement of economic ends. This definition manifests an implicit assumption that the ends of action in the farm management decision-making

*The theoretical considerations discussed here refer to theoretical aspects of rationality as it is defined and measured in this study. The reader is referred to the following sources for an introduction to the rationality concept in sociological perspective: A. M. Henderson and T. Parsons, *Max Weber: The Theory of Social and Economic Organization* (New York: Oxford University Press, 1947); Talcott Parsons, *The Structure of Social Action* (New York: McGraw-Hill, 1937); *Essays in Sociological Theory Pure and Applied* (Glencoe, Ill.: Free Press, 1949); Charles P. Loomis and J. A. Beegle, *Rural Social Systems* (New York: Prentice-Hall, 1950); Wilbert E. Moore, *Economy and Society* (Garden City: Doubleday, 1955).

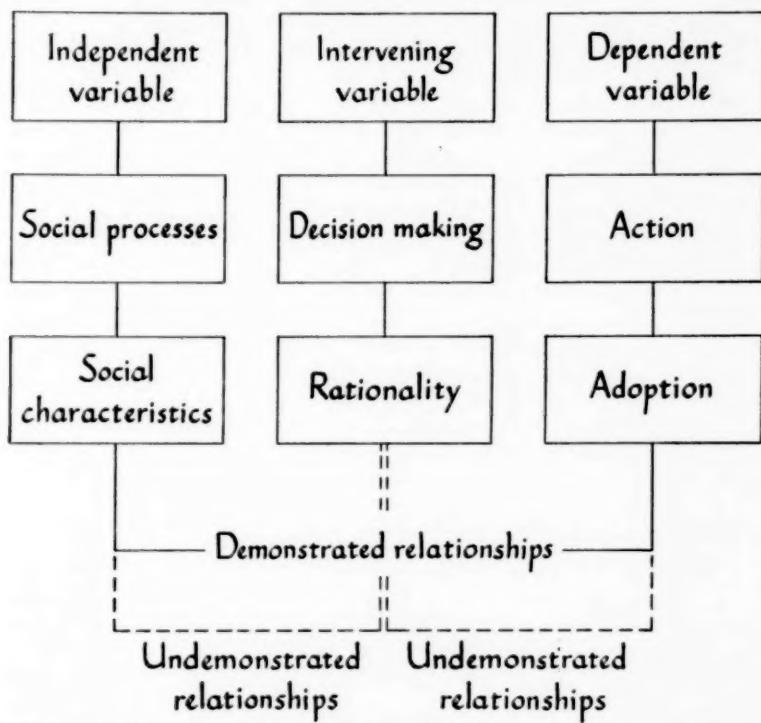


Figure 1. Paradigm illustrating theoretical relationship between social characteristics, rationality, and adoption of approved agricultural practices.

process are economic gain. Rationality, then, refers to an economic rationality. It is clear that the general definition of rationality departs considerably from this more specialized definition. In actuality, the definition utilized here allows the respondent to be nonrational in two ways: (1) in terms of his selection of nonrational means; or (2) in the selection of noneconomic ends.

As indicated above, the rationality index was achieved by the consensus of a board of judges on the basis of the surface validity of index items. The consequent operational measure of rationality contains at least the following four dimensions of rationality: (1) sources of authority; (2) kinds and degree of knowledge; (3) traditional versus changing criteria for action; and (4) vague versus explicit justification for action.

People with high rationality scores tend to utilize more authoritative sources of information in their decision making. They use and value planning and deliberation, and they keep more complete records than

people with lower scores. They also tend to give specific and economically judicious justification for action. Respondents with low rationality scores tend to utilize less authoritative sources of information. They do not keep records or display other planning and deliberative kinds of activity. They use traditional rather than changing criteria for decision making, and they tend to give vague or nonjudicious justification for action.

The following hypotheses are based upon the relationships found among selected variables and adoption and the postulation that rationality is usually antecedent to adoption.

Hypothesis I: The greater the contact with the Extension Service, the higher the rationality. This hypothesis was confirmed. Extension contact scores were found to be significantly and positively associated with rationality scores at the .001 level (Table 2).⁵

Table 2. Percentage distribution of respondents by rationality score and by contact with the Extension Service*

| Rationality score | Contact score | | | | All respondents (N=498) |
|-------------------|---------------|-------------|-------------|------------|-------------------------|
| | 0-1 (N=92) | 2-3 (N=127) | 4-5 (N=197) | 6-7 (N=82) | |
| 09-15 | 29.3 | 15.7 | 7.0 | 1.2 | 12.4 |
| 16-19 | 51.1 | 33.9 | 32.5 | 17.1 | 33.7 |
| 20-23 | 17.4 | 38.6 | 30.0 | 50.0 | 33.2 |
| 24-27 | 2.2 | 11.8 | 30.5 | 31.7 | 20.7 |

$\chi^2 = 100.10$; degrees of freedom = 9; $P < .001$.

*Contact with the Extension Service was measured by an index based on the following items: (a) number of extension meetings attended in 1955, (b) whether or not respondent attended any extension meetings in 1955, and (c) whether or not respondent had ever conducted a farm demonstration in co-operation with the county agent.

Table 2 indicates that 29.3 per cent of farmers with the lowest contact scores (0-1) were in the lowest rationality category (scores 09-15), whereas only 1.2 per cent of farmers with highest contact scores were in that rationality category. Similarly, only 2.2 per cent of lowest

⁵The direction of association was determined by inspection of the data and refers to the general pattern of association. The authors do not intend to imply that the variables are necessarily associated in a linear fashion—indeed, some of them clearly are not. The "true" pattern of relationship is, of course, a very important feature. It may well be, however, that the pattern of relationship for the middle range of rationality scores is as much a function of a nondifferentiating index as a reflection of "true empirical relationships."

contact farmers were in the highest rationality score category while 31.7 per cent of the highest contact farmers were in that rationality category.

Hypothesis II: The greater the degree of mechanization, the higher the rationality. This hypothesis was confirmed. Rationality scores were significantly and positively associated beyond the .001 level with the degree of mechanization as measured by an equipment index (Table 3).

Table 3. Percentage distribution of respondents by rationality score and by degree of mechanization*

| Rationality score | Degree of mechanization | | | All respondents (N=495) |
|-------------------|-------------------------|-------------------|-----------------|----------------------------|
| | Low (N=109) | Medium (N=189) | High (N=197) | |
| 09-15 | 24.8 | 12.2 | 5.6 | 12.3 |
| 16-19 | 39.4 | 33.8 | 31.0 | 34.0 |
| 20-23 | 18.4 | 37.6 | 36.5 | 32.9 |
| 24-27 | 17.4 | 16.4 | 26.9 | 20.8 |

$\chi^2 = 37.5$; degrees of freedom = 6; $P < .001$.

*Degree of mechanization is measured by equipment scores as follows: low = no tractor or other major power equipment; medium = one tractor but no other major power equipment; high = one or two tractors plus other major power equipment.

Table 3 indicates that whereas 25 per cent of farmers in the low mechanization category received lowest rationality scores, 12 per cent of mediums and 6 per cent of highs were in that rationality category. Seventeen per cent of lows, 16 per cent of mediums, and 27 per cent of highs were in the higher rationality category.

Hypothesis III: The larger the size of farm, the higher the rationality. This hypothesis was confirmed. Rationality scores were found to be significantly and positively associated with size of farm as measured by total acres of cropland and improved pasture operated (Table 4).

Twenty-nine per cent of farmers who operated less than 5 acres of cropland and improved pasture received rationality scores of less than 16. Only 5 per cent of farmers who operated more than 40 acres received these low scores. On the other hand, although 7 per cent of farmers with less than 5 acres of cropland and improved pasture received the highest rationality scores, 36 per cent of farmers with more than 40 acres received such scores. The distribution of rationality scores among farmers in the 05-19 and 20-39 acre groups were not

Table 4. Percentage distribution of respondents by rationality score and by size of farm (as indicated by acres of cropland and improved pasture operated)

| Rationality score | Acres of cropland and improved pasture | | | | All respondents (N=497) |
|----------------------|--|------------------|------------------|----------------------|-------------------------------|
| | 0-04 (N=83) | 05-19 (N=165) | 20-39 (N=115) | 40 & over (N=134) | |
| | | | | | |
| 09-15 | 28.9 | 13.3 | 7.8 | 5.2 | 12.5 |
| 16-19 | 38.6 | 34.5 | 37.4 | 26.2 | 33.6 |
| 20-23 | 25.3 | 35.8 | 35.7 | 32.8 | 33.2 |
| 24-27 | 7.2 | 16.4 | 19.1 | 35.8 | 20.7 |

$\chi^2 = 55.05$; degrees of freedom = 9; $P < .001$.

strikingly different, although they are generally in the hypothesized direction.

Hypothesis IV: *Age of operator will be inversely associated with rationality.* This hypothesis was confirmed at the .001 level (Table 5).

Regarding age, approximately 10 per cent of farmers between the ages of 18 to 29 fell into the lowest rationality category as compared to 20 per cent of those 50 years old and older. Only 11 per cent of farmers 50 years old or older were in the high rationality category, while over 31 per cent of farmers 18 to 29 years of age received these high scores.

Hypothesis V: *Rationality will vary by tenure and the degree of ownership.* This hypothesis was confirmed at the .02 level; part owners

Table 5. Percentage distribution of respondents by rationality score and by age

| Rationality score | Age | | | | All respondents (N=498) |
|----------------------|-----------------|------------------|------------------|----------------------|-------------------------------|
| | 18-29 (N=51) | 30-39 (N=184) | 40-49 (N=157) | 50 & over (N=106) | |
| | | | | | |
| 09-15 | 9.8 | 9.8 | 11.5 | 19.8 | 12.4 |
| 16-19 | 21.6 | 26.1 | 40.1 | 43.4 | 33.7 |
| 20-23 | 37.3 | 36.4 | 33.1 | 25.5 | 33.2 |
| 24-27 | 31.3 | 27.7 | 15.3 | 11.3 | 20.7 |

$\chi^2 = 33.40$; degrees of freedom = 9; $P < .001$.

displayed the highest degree of rationality with full owners and tenants following in that order (Table 6).

Table 6. Percentage distribution of respondents by rationality score and by tenure or degree of ownership

| Rationality score | Tenure | | | All respondents (N=498) |
|-------------------|------------------------|-------------------|-------------------|----------------------------|
| | Part owners (N=238) | Owners (N=184) | Tenants (N=76) | |
| 09-15 | 7.7 | 13.0 | 22.4 | 12.4 |
| 16-19 | 30.4 | 37.8 | 28.9 | 33.7 |
| 20-23 | 36.4 | 31.1 | 31.6 | 33.2 |
| 24-27 | 25.5 | 18.1 | 17.1 | 20.7 |

$\chi^2 = 16.11$; degrees of freedom = 6; $P < .02$.

Hypothesis VI: The higher the level of living, the greater the rationality. This hypothesis was confirmed at the .001 level (Table 7).

Table 7. Percentage distribution of respondents by rationality score and by level of living

| Rationality score | Level of living score | | | | All respondents (N=498) |
|----------------------|-----------------------|------------------|------------------|-----------------|-------------------------------|
| | 00-11 (N=117) | 12-15 (N=128) | 16-19 (N=155) | 20-25 (N=98) | |
| 09-15 | 24.8 | 14.1 | 6.5 | 5.1 | 12.4 |
| 16-19 | 44.4 | 34.4 | 29.0 | 27.6 | 33.7 |
| 20-23 | 19.7 | 37.4 | 38.0 | 35.7 | 33.2 |
| 24-27 | 11.1 | 14.1 | 26.5 | 31.6 | 20.7 |

$\chi^2 = 48.30$; degrees of freedom = 9; $P < .001$.

Hypothesis VII: The greater the degree of participation in formal organizations, the higher the rationality. This hypothesis was confirmed at the .001 level—social participation was measured by a modification of the Chapin scale—(Table 8).

Hypothesis VIII: The greater the amount of education, the higher the degree of rationality. This hypothesis was confirmed at the .001 level (Table 9).

Regarding education and rationality, 23 per cent of the respondents

Table 8. Percentage distribution of respondents by rationality score and by social participation score

| Rationality score | Social participation score | | | All respondents (N=498) |
|-------------------|----------------------------|------------------|----------------------|----------------------------|
| | 00-06 (N=199) | 07-14 (N=183) | 15 & over (N=116) | |
| 09-15 | 20.6 | 8.2 | 5.2 | 12.4 |
| 16-19 | 37.7 | 34.4 | 25.9 | 33.7 |
| 20-23 | 26.1 | 40.4 | 33.6 | 33.2 |
| 24-27 | 15.6 | 17.0 | 35.3 | 20.7 |

$\chi^2 = 43.00$; degrees of freedom = 6; $P < .001$.

who had less than 8 years of education fell into the lowest rationality category (scores 9 to 15), whereas, only 2.5 per cent of those with 11 to 16 years of education fell into this lowest rationality category. At the same time, only 9 per cent of farmers with less than 8 years of education were in the highest rationality category as compared to 38 per cent of those with 11 to 16 years of education (Table 9).

Table 9. Percentage distribution of respondents by rationality score and by education

| Rationality score | Grades of school completed | | | All respondents (N=492) |
|-------------------|----------------------------|------------------|------------------|----------------------------|
| | 00-07 (N=175) | 08-10 (N=156) | 11-16 (N=161) | |
| 09-15 | 22.9 | 11.5 | 2.5 | 12.6 |
| 16-19 | 41.1 | 35.3 | 21.7 | 32.9 |
| 20-23 | 26.9 | 36.5 | 37.9 | 33.5 |
| 24-27 | 9.1 | 16.7 | 37.9 | 21.0 |

$\chi^2 = 75.15$; degrees of freedom = 6; $P < .001$.

RATIONALITY AND THE ADOPTION OF RECOMMENDED CORN PRACTICES

The Subcommittee on the Diffusion and Adoption of Farm Practices of the Rural Sociological Society has suggested that the greater the degree of economic rationality in farming matters, the greater the

likelihood of accepting improved farm practices.⁶ This hypothesis is supported by our data. Rationality was found to be significantly and positively associated with the adoption of recommended corn practices as measured by a corn practice score.⁷ Level of significance was at the .001 level. Over 43 per cent of farmers in the lowest rationality category received the lowest corn practice score, while less than 10 per cent of the highest rationality farmers received the lowest adoption scores. Whereas only 2 per cent of lowest rationality farmers received the highest adoption scores, 41 per cent of high rationality farmers received such scores (Table 10).

Table 10. Percentage distribution of respondents by corn practice adoption score and by rationality score

| Corn practice score | Rationality score | | | | All respondents (N=497) |
|------------------------|-------------------|------------------|------------------|------------------|-------------------------------|
| | 09-15 (N=62) | 16-19 (N=168) | 20-23 (N=165) | 24-27 (N=102) | |
| | | | | | |
| 0-2 | 43.5 | 17.3 | 9.1 | 9.8 | 16.3 |
| 3-4 | 41.9 | 32.1 | 18.8 | 11.8 | 24.8 |
| 5-6 | 12.9 | 29.8 | 44.8 | 37.3 | 34.2 |
| 7-9 | 1.6 | 20.8 | 27.3 | 41.2 | 24.8 |

$\chi^2 = 97.75$; degrees of freedom = 9; $P < .001$.

RATIONALITY AS AN INTERVENING VARIABLE

The association between rationality and adoption and the relationship between rationality and the independent variables suggest that rationality may be operating as an intervening variable between the independent variables and adoption. In other words, the relationship between adoption and the independent variables may result because adoption is related to rationality and rationality is related to the same variables *but is often antecedent* to the adoption process. Space will not permit an exhaustive analysis of this hypothesis but the following observations offer some support.

When contact with extension, rationality score, and corn practice score are considered jointly, rationality appears to be a better predictor of adoption than does contact (Table 11). For example, 70 per cent of

*Subcommittee on the Diffusion and Adoption of Farm Practices of the Rural Sociological Society, *op. cit.*

⁷The corn practice score is based on whether or not each of 9 practice recommendations by the Agricultural Extension Service had been adopted. The score could range from 0 (none adopted) to 9 (all adopted).

Table 11. Percentage distribution of respondents by extension contact score, rationality score, and corn practice adoption score

| Rationality score,* and Contact score† | Practice adoption score‡ | | |
|---|--------------------------|------|-------|
| | Low | High | Total |
| Low rationality (N=230) | 59.1 | 40.9 | 100.0 |
| Low contact (N=137) | 66.4 | 33.6 | 100.0 |
| High contact (N=93) | 48.4 | 51.6 | 100.0 |
| $\chi^2 = 7.30$; degrees of freedom = 1; $P < .01$ | | | |
| High rationality (N=267) | 25.5 | 74.5 | 100.0 |
| Low contact (N=82) | 30.5 | 69.8 | 100.0 |
| High contact (N=185) | 23.2 | 76.8 | 100.0 |
| $\chi^2 = 1.49$; degrees of freedom = 1; $P > .30$ | | | |

*Low rationality refers to scores of 09-19, and high rationality to scores of 20-27.

†Low contact refers to scores of 0-3, and high contact refers to scores of 4-7.

‡Low practice adoption includes scores of 0-4 and high adoption refers to scores of 5-9.

the respondents who were low on contact but high on rationality were high adopters; and this percentage who were high adopters increased by only 7 percentage points to 77 per cent of those who were high on both contact and rationality.

However, a greater proportion of farmers who had high rationality scores but low extension contacts were higher adopters than those who had low rationality scores and high extension contacts. Thus, 70 per cent of the respondents who were high on rationality but low on extension contacts were high adopters as compared with 52 per cent who were low on rationality but high on extension contacts. *As a matter of fact, there is no significant relationship between contact with extension (as measured by this index) and adoption of corn practices recommended by this agency among "high rationality" farm operators. However, among "low rationality" farmers there is still a positive relationship between contact with the Extension Service and adoption of practices.*

These data suggest that, if the farmer has attained a certain level of rationality, the extent of contact with the Extension Service may not be particularly important in determining if practices are to be adopted. However, among farm operators who are low on rationality, the extent to which practices are adopted apparently depends to some extent on how great the operator's contact with extension is.

This finding suggests further joint consideration of rationality, the independent variables, and adoption.

CONCEPTUAL VALIDITY OF OPERATIONAL RATIONALITY

The rationality index, as has been indicated, was a measure achieved by the use of a board of judges on the basis of the face validity of the limited number of questions and the responses to them. Some conceptual validity is suggested by the following observations (Table 12).

All respondents were asked if they had figured the profit on a major enterprise. The 201 respondents who said "yes" were asked the following question: "Have you ever used this kind of information to make any changes in your farming operations?" There was a direct relationship between the use of such information and rationality score. Thus, only 12 per cent of those who had the lowest rationality scores had used a profit analysis to make changes in their farming operation as compared to 68 per cent of those with the highest rationality score (Table 12).

Table 12. Percentage distribution of respondents who had made profit analysis by whether they used analysis to make changes in farming operations and by rationality score

| Whether changes made or not | Rationality score | | | All respondents (N = 201) |
|---|-------------------------|-----------------------------|---------------------------|---------------------------------|
| | Low 0-19 (N = 33) | Medium 20-23 (N = 88) | High 24-27 (N = 80) | |
| | | | | |
| No changes made | 87.9 | 48.9 | 32.5 | 48.8 |
| Some changes made on basis of analysis | 12.1 | 51.1 | 67.5 | 51.2 |

$\chi^2 = 28.74$; degrees of freedom = 2; $P < .001$.

A number of variables that have been found to be associated with the adoption of recommended farm practices were found to be associated in the same manner with a rationality index. This rationality index was also found to be associated with adoption of recommended practices, and suggests that the degree of rationality of the farm operator may operate as an important intervening variable between these socioeconomic variables and adoption of practices.

EVERETT M. ROGERS

A Conceptual Variable Analysis of Technological Change*

One approach to general sociological theory is utilized in the present study. Technological change, as measured by an adoption of farm practices scale, varies with the concepts of change orientation, communication competence, and status achievement. No significant relationships were found between technological change and locality group cohesion, family integration, and kinship group cohesion. A coefficient of multiple correlation of .409 indicates that much of the variation in technological change remains to be explained by other than the six conceptual variables included in the present study.

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ONE of the salient characteristics of modern American society is the rapidity with which technological changes are taking place. New technology has resulted in important changes in such varied fields as industry, medicine, education, and homemaking. One field in which technological changes have had an especially prominent effect is agriculture. New seed varieties, fertilizers, machines, livestock feeds, and other new agricultural practices are constantly being developed and recommended to farmers.

Rural sociologists have directed considerable research effort to the study of the processes by which new technological changes are communicated to and adopted by rural people. Few of these researchers, however, have attempted explicitly to relate general sociological theory to their hypotheses or findings. The purpose of this article is to utilize one approach to sociological theory in the study of technological change.

*This article is Journal Paper No. J-3275 of the Iowa Agricultural and Home Economics Experiment Station, Ames, Iowa, Project No. 1236. The author wishes to express gratitude to George M. Beal, Iowa State College, for his guidance of the present study and to Robert L. Hamblin, Washington University, for introducing the author to the present approach to sociological theory.

CONCEPTUAL VARIABLE ANALYSIS

The method of analysis used in this study is that of conceptual variable analysis. Blumer¹ has referred to variable analysis as the scheme of sociological analysis which seeks to reduce human group life to variables and their relations. At least two rural sociologists² have recently attempted variable analyses of adoption of farm practices scores. The effort in these researches was directed toward accounting for as large a portion as possible of the variation in adoption of farm practices scores.

The essential steps in a conceptual variable analysis may be described briefly as follows: The first step is to express all concepts as variables. A concept is defined as an entity or dimension stated in its basic or simplest ("primitive") terms. A conceptual variable is a concept expressed as a continuous variable. A conceptual variable to be used in this article, for example, is technological change. Technological change is defined as the degree to which individuals accept new technological practices. A concept ideally should be general or abstract enough so that it may be applied to many specific situations. For example, technological change could be studied in industry, education, homemaking, or in other applications.

In addition to the dependent variable of technological change, six independent conceptual variables are utilized³ in this study: (1) change orientation, (2) communication competence, (3) status achievement, (4) cohesion with the locality group, (5) family integration and (6) cohesion with the kinship group.

The next step in variable analysis is to develop operational scales or indexes to measure each conceptual variable. An operation is defined as the empirical referent of a concept. For example, the adoption of farm practices scale is the operational measure of the concept of technological change. The degree to which the operation is a valid measure of the concept is a necessary consideration. This linkage between concept and operation is called an epistemic correlation.

¹Herbert Blumer, "Sociological Analysis and the 'Variable,'" *American Sociological Review*, XXI (1956), 683-690.

²Frederick C. Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," *Rural Sociology* XXI (1956), 284-292; and James H. Copp, *Personal and Social Factors Associated with the Adoption of Recommended Farm Practices among Cattlemen* (Kansas Agr. Expt. Sta. Tech. Bull. 83; Manhattan, 1956).

³One of Blumer's criticisms of variable analysis (*op. cit.*) was the lack of criteria available for the selection of conceptual variables. The six conceptual variables in the present study were selected on the basis of five criteria which required each concept to be: (1) sociological, (2) manipulatable or dynamic, (3) general or abstract in nature, (4) operationalizable, and (5) expected to be highly related to the dependent variable. These criteria were based upon the five characteristics which Robert K. Merton has suggested that sociological theory should possess in *Social Theory and Social Structure* (Glencoe, Ill.: Free Press, 1949), pp. 93-94.

The postulated relationship between two conceptual variables is called a general hypothesis. For example, the general hypothesis may be stated: the degree of technological change varies directly with the degree of status achievement. A general hypothesis is tested by means of testing an empirical hypothesis. An empirical hypothesis is the postulated relationship between two operational measures. For example, an empirical hypothesis is: the adoption of farm practices scores vary directly with the status achievement scores. An empirical hypothesis is usually accepted or rejected on the basis of statistical tests of significance. A general hypothesis is supported or not on the basis of the testing of the corresponding empirical hypothesis. Truth claims are added to a general hypothesis by similar findings from other studies involving the relationship between the two conceptual variables in a variety of situations.

As additional truth claims are added to a general hypothesis by findings from other studies, greater confidence may be placed in the postulated relationship between the concepts. The relationships between each of these two concepts and other concepts may also be studied, and, as findings of this nature are gradually accumulated, a body of general sociological theory is developed. In this fashion, it can be seen that the theoretical findings are accumulated in an integrated and consistent manner. The eventual goal is the development of a body of general sociological theory composed of the interrelationships among a number of concepts.

A SITUATIONAL ANALYSIS

Perhaps one of the best means of conceptualizing the expected relationships between each of the six selected conceptual variables and technological change is to describe briefly a hypothetical situation in which technological change is taking place.

Even at the most basic and elementary level of conceptualization, a situational analysis of technological change would require at least the following components⁴ to be present: (1) an actor which in this case is a farm operator; (2) a technological change which in this specific example is a new farm practice; (3) communication devices whereby the actor may learn of the new technological change; (4) various mental attitudes that the actor possesses as a product of his past experience; and (5) various group situations of which the actor is a part and which may influence his behavior. The specific behavior under analysis is the adoption of the new technological change by the actor. Six conceptual variables were derived from this situational analysis of technological change.

⁴This situational analysis makes use of component patterns essentially similar to those described by Lowell Julliard Carr, *Situational Analysis* (New York: Harper, 1948), pp. 3-4.

In the situational analysis, it was mentioned that before the actor might adopt a new technological change, it was necessary for him to learn of its existence and some of its intrinsic qualities. The concept of communication competence is defined as the degree to which an individual regards as credible the more technically accurate sources of information. Certain informational sources have a low degree of accuracy (neighbors, relatives, and friends) when compared to others (county agent, farm magazines, etc.). The past research findings of Fliegel,⁵ Copp,⁶ Wilkening,⁷ and Lionberger⁸ suggest the general hypothesis: the degree of technological change varies directly with the degree of communication competence.

The operational measure of technological change is an adoption of farm practices scale,⁹ and the operational measure of communication competence is a communication competence index.¹⁰ The empirical hypothesis is formulated that a positive relationship is expected between the two operational measures. The attitude an individual holds toward technological change might be expected to be highly related to the actual degree of technological change. The concept of change orientation is defined as the degree to which an individual possesses a favorable attitude toward technological changes.

The past research findings of Fliegel,¹¹ Wilkening,¹² and Lionberger¹³ suggest the general hypothesis: the degree of technological change varies directly with the degree of change orientation. In order to avoid the problem of a spurious overlap of the attitude dimension with actual adoption (which has troubled other research workers), a change orientation index was constructed in order to measure a more general attitude toward change. Index items included opinion of

⁵Fliegel, *op. cit.*

⁶Copp, *op. cit.*

⁷Eugene A. Wilkening, *Adoption of Improved Farm Practices as Related to Family Factors* (Wisconsin Agr. Expt. Sta. Res. Bull. 183; Madison, 1953), pp. 20-21.

⁸Herbert F. Lionberger, *Information-Seeking Habits and Characteristics of Farm Operators* (Missouri Agr. Expt. Sta. Res. Bull. 581; Columbia, 1955) p. 15.

⁹This adoption scale was composed of the adoption or nonadoption of 24 recent farming practices such as soil insecticides, commercial fertilizer, pesticides, Ladino Clover, contouring, and others.

¹⁰For a description of this index (as well as the operational measures of the other five dependent conceptual variables), the specific items included, and index reliability and validity, see Everett M. Rogers, "A Conceptual Variable Analysis of Technological Change" (Ph.D. dissertation, Iowa State College, 1957). Typical items included in the communication competence index were contact with Extension Service, number of farm magazines read, number of farm TV shows watched, and attendance at agricultural evening classes.

¹¹Fliegel, *op. cit.*

¹²Eugene A. Wilkening, *Acceptance of Improved Farm Practices in Three Coastal Plain Counties* (North Carolina Agr. Expt. Sta. Tech. Bull. 98; Raleigh, 1952), pp. 40-50.

¹³Lionberger, *op. cit.*, pp. 15-30.

innovators and importance of adoption to prestige and to income. The empirical hypothesis is formulated that a positive relationship is expected between the change orientation scores and the adoption scores.

The concept of status achievement is defined as the degree to which an individual has achieved high social status in the social system. A general finding of past studies has been that individuals of higher status tend to adopt more technological changes, although a variety of measures of social status have been used. Positive relationships between status and technological change have been reported by Fliegel,¹⁴ Copp,¹⁵ and Wilkening.¹⁶ A composite status achievement index composed of such items as rental status, education, net worth, prestige self-rating, and formal participation was constructed to measure the concept of status achievement. The empirical hypothesis is formulated that a positive relationship is expected between the adoption scores and the status achievement scores.

The concept of cohesion¹⁷ is defined as the degree to which an individual accepts the roles prescribed by a reference group. The degree to which an individual fulfills the role expectations of the locality reference group (neighborhood and community) is operationally measured by the index of extralocality orientation.¹⁸ It is reasoned that the individual who is oriented outside of his local group would have a low degree of cohesion with the locality group. Because of the more *gemeinschaft* nature of the local group with its emphasis on more traditional norms, an individual with a high degree of cohesion with the locality group might be expected to have a low degree of technological change.

The findings of Copp,¹⁹ Wilkening,²⁰ Ryan and Gross,²¹ and Lionberger²² suggest the general hypothesis: the degree of technological changes varies inversely with the degree of cohesion an individual has with the locality group. Hence, the empirical hypothesis is formulated that a positive relationship is expected between the adoption scores and extralocality orientation scores.

¹⁴Fliegel, *op. cit.*

¹⁵Copp, *op. cit.*, p. 77.

¹⁶Wilkening, *Acceptance*, pp. 44-45; and *Adoption*, pp. 40-41.

¹⁷Robert L. Hamblin, "An Approach for Building General Theory in Sociology" (paper presented at American Sociological Society, Detroit, Mich., Sept. 9, 1956).

¹⁸Typical items were reading nonlocal rather than local newspapers, visiting more often with nonlocal than with local people, and participating in nonlocal rather than local formal organizations.

¹⁹Copp, *op. cit.*, pp. 22-23.

²⁰Eugene A. Wilkening, "A Sociopsychological Approach to the Study of the Acceptance of Innovations in Farming," *Rural Sociology*, XV (1950), 352-364.

²¹Bryce Ryan and Neal Gross, *Acceptance and Diffusion of Hybrid Seed Corn in Two Iowa Communities* (Iowa Agr. Expt. Sta. Res. Bull. 372; Ames, 1950).

²²Herbert F. Lionberger, "Some Characteristics of Farmers Sought as Sources of Farm Information in a Missouri Community," *Rural Sociology* XVIII (1953), 327-338.

Another reference group that has been found to place a low value on technological change is the kinship group. An individual's kin would generally tend to be a deterring influence upon his adoption behavior because of the more primary or *gemeinschaft* nature, the tendency toward *status quo* norms, and the greater emphasis upon traditional orientation in the kinship group. The conflict that might arise due to the disparity between the prescribed role and the individual's wishes might be reflected in the individual's relationship with his kin. The farmer who does not fulfill the kinship group's role expectations for his adoption behavior will be rejected by that reference group. This rejection might be reflected in a shift in orientation from the kinship group to other groups. The degree to which he is fulfilling the role prescriptions of the kinship group is a measure of cohesion with that group.

Past findings have not been consistent in regard to the relationship between adoption and kinship orientation. Wilkening²³ found a negative relationship in one study and no significant relationship in another.²⁴ In terms of the previous discussion of cohesion with the locality group, the general hypothesis is suggested: the degree of technological change varies inversely with the degree of cohesion that an individual has with the kinship group. The kinship orientation index²⁵ was constructed to operationalize the concept of cohesion with the kinship group. The empirical hypothesis is formulated that a negative relationship is expected between the adoption scores and the kinship orientation scores.

Just as kinship and locality groups may serve as important referents to the farmer in making adoption decisions, so may his household family be an important group influence upon his behavior. One aspect of an individual's relationship with the family group is the degree to which the member is integrated. A wide variety of definitions has been suggested for this concept of family integration by Angell,²⁶ Hill,²⁷ LeMasters,²⁸ and Burgess and Locke.²⁹ Integration is a concept

²³Wilkening, *Sociopsychological Approach*, p. 362.

²⁴Eugene A. Wilkening, "Change in Farm Technology as Related to Familism, Family Decision Making and Family Integration," *American Sociological Review* XIX (1954), 29-37.

²⁵This index contained items designed to indicate the relative importance of the kinship reference group to the individual as reflected by his degree of contact with his kin. Typical items were exchanging work, visiting and card playing, attending local and distant events, and discussing farming matters. Each item was scored on the basis of (1) more with relatives or (2) more with nonrelatives.

²⁶Robert Cooley Angell, *The Family Encounters the Depression* (New York: Scribner's, 1936), p. 15.

²⁷Reuben Hill, *Families under Stress* (New York: Harper, 1949), pp. 130-131.

²⁸E. E. LeMasters, "Social Class Mobility and Family Integration," *Marriage and Family Living*, XVI (1954), 226-232.

²⁹Ernest W. Burgess and Harvey J. Locke, *The Family* (New York: American Book, 1945), p. 441.

that has been utilized by sociologists in the study of a wide variety of different social systems. Hamblin³⁰ has defined integration as "the degree to which units of a social system are oriented toward optimizing rewards for other units." In a more limited usage, the concept of family integration is defined as the degree to which an individual is oriented toward optimizing rewards and satisfactions for other family members.

Wilkening³¹ found little relationship between family integration and technological change. However, there seemed to be some reason for expecting the well-integrated family member to be more reluctant to undertake new farm practices. The family might be expected generally to place a low value on adoption, as the group is generally slower to change than the individual. The family is sometimes in competition with the adoption of farm practices for scarce resources, such as capital. On the basis of this reasoning, the general hypothesis is suggested: the degree of technological change varies inversely with the degree of family integration. This concept of family integration was operationalized by means of a 12-item family integration index.³² The empirical hypothesis is formulated that a negative relationship is expected between the adoption scores and the family integration scores.

FINDINGS

The six general hypotheses were tested by means of the statistical technique of multiple correlation. Data were secured by means of field interviews with the 148 farm operators residing in an Iowa rural community in 1955. The agriculture of this area is typical of the highly commercialized "corn-hog" farming of central Iowa. The seven conceptual variables were operationalized by means of the seven indexes mentioned previously. These indexes were tested for validity and reliability³³ and accepted as measures of the concepts. The 21 coefficients of correlation expressing the interrelationships between the seven indexes are presented in Table 1.

An inspection of the zero-order correlations of the independent variables with the dependent variable, X_0 , shows them to be in the expected direction suggested by the general hypotheses, but not all of them to be statistically significant from zero. Neither extralocality orientation, family integration, nor kinship orientation is significantly correlated with adoption. These variables will be retained in the multiple correlation analysis because certain of them are significantly

³⁰Hamblin, *op. cit.*

³¹Wilkening, *Change in Farm Technology*, p. 32.

³²Some typical items in this index were degree to which formal participation is a joint family affair, importance of education for children, importance of setting children up in farming, and importance of a satisfactory family life.

³³The validity and reliability of the seven scales are discussed in detail in Rogers, *op. cit.*, pp. 71-119.

Table 1. Zero-order correlation coefficients and their significance

| Variable* | X_1 | X_2 | X_3 | X_4 | X_5 | X_6 |
|-----------|-------|-------|-------|--------|-------|--------|
| X_0 | .262† | .275† | .231† | .026 | -.083 | -.144 |
| X_1 | — | .275† | .144 | -.118 | .074 | -.010 |
| X_2 | — | — | .282† | -.265† | -.007 | -.232† |
| X_3 | — | — | — | -.117 | .075 | -.070 |
| X_4 | — | — | — | — | -.005 | -.128 |
| X_5 | — | — | — | — | — | -.104 |
| X_6 | — | — | — | — | — | — |

*Where: X_0 = adoption of farm practices scale; X_1 = change orientation index; X_2 = communication competence index; X_3 = status achievement index; X_4 = index of extralocality orientation; X_5 = family integration index; X_6 = index of kinship orientation.

†Significant at the 1 per cent level.

related to certain of the other independent variables. They will function primarily as control variables or "suppressants."³⁴

The coefficient of multiple correlation expresses the relationship between the dependent variable and the combined effect of the six independent variables. The coefficient of multiple correlation is written as $R_{0.123456}$. $R^2_{0.123456}$ is the percentage of the variation in the dependent variable, X_0 , that is explained by the combined effect of the six independent variables and is termed the coefficient of multiple determination.

The coefficient of multiple determination is .167. In other words, 16.7 per cent of the variation in the adoption scores can be accounted for by the combined effect of the six independent variables. $R_{0.123456}$ is obtained by computing the square root of $R^2_{0.123456}$. The coefficient of multiple correlation is .409.

By means of partial correlation techniques, it is possible to determine the relationship between each independent variable and the dependent variable while controlling on the effect of the other five independent variables. As an example of the notation used, a fifth-order partial correlation, $R_{01.23456}$, is the relationship between X_0 and X_1 , when the effects of X_2 , X_3 , ... X_6 are controlled. The formula by which these partial correlations were computed is given by Mordecai Ezekiel³⁵ as:

$$R_{01.23456} = \sqrt{1 - \frac{1 - R^2_{0.123456}}{1 - R^2_{0.23456}}}$$

³⁴For a description of suppressants in multiple regression analysis see Quinn McNemar, *Psychological Statistics* (New York: John Wiley, 1949), pp. 163-164.

³⁵Methods of Correlation Analysis (New York: John Wiley, 1941), p. 215.

As can be seen in Table 2, when the effects of the other five independent variables were controlled by partial correlation techniques, relationships significantly different from zero were found between technological change and the concepts of change orientation, communication competence, and status achievement. Relationships not significantly different from zero existed between technological change and locality group cohesion, family integration, and kinship group cohesion.

Table 2. Fifth-order partial correlations and their significance

| Partial correlation coefficient | Variance ratio or <i>F</i> test | Conclusion when effect of other 5 conceptual variables is controlled |
|---------------------------------|---------------------------------|--|
| $R_{01.23456} = .214$ | 6.79* | X_1 , change orientation, is related to technological change |
| $R_{02.13456} = .166$ | 3.99* | X_2 , communication competence, is related to technological change |
| $R_{03.12456} = .171$ | 4.26* | X_3 , status achievement, is related to technological change |
| $R_{04.12356} = .109$ | 1.66 | X_4 , cohesion with locality group, is not related to technological change |
| $R_{05.12346} = .127$ | 2.33 | X_5 , family integration, is not related to technological change |
| $R_{06.12345} = .091$ | 1.18 | X_6 , cohesion with kinship group, is not related to technological change |

*Indicates an *F* value greater than the 3.91 required for significance at the 5 per cent level with one and 141 degrees of freedom.

SUMMARY

The statistical method of multiple correlation was utilized to determine the relationships between the dependent conceptual variable, technological change, and six independent conceptual variables: change orientation, communication competence, status achievement, cohesion with the locality group, family integration, and cohesion with the kinship group. Six general hypotheses postulating these relationships between the conceptual variables were tested by means of the appropriate empirical hypotheses between indexes constructed to operationalize the concepts.

On the basis of correlation techniques, relationships significantly different from zero were found between technological change and the first three concepts listed previously. Relationships not significantly different from zero were found between technological change and the latter three concepts.

The significance of these relationships was not changed by controlling on the effect of the other five independent variables by means of partial correlation techniques. Almost 17 per cent of the variation in the dependent conceptual variable was explained by the variation in the six independent variables, which indicates that much of the variation in technological change remains to be explained by other than the six conceptual variables included in the present study.

Although the approach to sociological theory utilized in this article is certainly exploratory, perhaps with improvements and appropriate changes a similar approach might be utilized both in other studies of technological change and in other analyses of human group life.

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The Function of Information Sources in the Farm Practice Adoption Process*

This paper reports a study of the use of information sources by farm operators in the farm practice adoption process and develops a model to account for the differential use of sources as farmers progress toward adoption. Utilizing a less-structured interviewing technique, the findings from this study of 175 Pennsylvania dairy farmers lend support to previous investigations of the use of information sources in the various stages of the adoption process. The model constructed to account for the differential use of information sources as farmers progress toward adoption involves five considerations: (1) institutionalization of information sources, (2) the temporal sequence of sources, (3) the possibility of negative recommendations, (4) scheduling limitations, and (5) the need for local legitimization. A reasonably good fit was obtained between model and data. A prediction derived from the model, that farmers citing peer influences as sources in the early stages of the adoption process would make less progress toward adoption than farmers citing other sources, was also supported by the data.

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RECENT research in farm practice adoption has conceptualized adoption as a process involving a number of successive stages.¹ The findings stemming from this approach suggest that the selection of information sources varies as farmers move from one stage to another

*Journal Paper No. 2208 of the Pennsylvania Agricultural Experiment Station. The material for this paper is drawn from a research project directed by Emory J. Brown and James H. Copp. Maurice L. Sill conducted the field work.

¹E. A. Wilkening, "Roles of Communicating Agents in Technological Change in Agriculture," *Social Forces XXXIV* (May, 1956), 361-367; North Central Regional Subcommittee on the Diffusion of New Ideas and Farm Practices, *How Farm People*

in the adoption process. Taking these findings as a point of departure, the objectives of this paper are (1) to report the results of a replicative study of farmers' use of information sources in the adoption process and (2) to develop a model which will account for the function of information sources in this process.

It is quite natural that the adoption of a technological innovation in agriculture should be regarded as a process. Adoption is an activity of the farmer taking place over a period of time. From first awareness to regular use there must be a transformation in the orientations and behavior of the farm operator. Adoption of a farm practice is a bundle of related events flowing through time, not an instantaneous metamorphosis.

It is also natural that rural sociologists should conceptualize this bundle of events as a sequence of stages. There is a rich tradition in sociology and social psychology in which processes or acts are broken down into stages. For instance, John Dewey subdivides problem-solving activity into five stages.² George Herbert Mead finds four stages in the act.³ Loomis and Beegle have three stages in the process of sociocultural linkage.⁴ Additional examples are legion.

However, in following these natural inclinations it has not always been clearly recognized that the stages are merely a conceptual framework for organizing the data. In at least one instance, the stages seem to have been treated as a testable hypothesis.⁵ But a conceptual framework is neither true nor false; it is a scaffolding erected for the construction of generalizations. A conceptual framework can only be tested on the basis of its utility, its ability to help in the understanding and prediction of behavior.

In terms of utility one can look, on the one hand, for the degree of organization that the conceptual system gives to the phenomena and, on the other hand, for the possibility of deriving from the conceptual system a set of stimuli that are meaningful to the respondent in the research situation. The latter consideration is particularly important in rural sociology, where so many of the data are obtained by communicating with the subjects. For example, it is very difficult to do decision-making research in which farmers are asked to respond to changing probabilities of risk, because many farmers do not understand the idea of probability, not to mention the idea of changing

Accept New Ideas (Iowa Agr. Ext. Serv. Spec. Rep. 15; Ames, 1955); George M. Beal, Everett M. Rogers, and Joe M. Bohlen, "Validity of the Concept of Stages in the Adoption Process" (Iowa Agr. Expt. Sta. Journal Paper J-3100; Ames, 1956).

²John Dewey, *How We Think* (New York: Heath, 1910), pp. 72-77.

³George Herbert Mead, "Stages in the Act: Preliminary Statement," in Anselm Strauss, ed., *The Social Psychology of George Herbert Mead* (Chicago: Phoenix Books, 1956), pp. 97-119.

⁴Charles P. Loomis and J. Allen Beegle, *Rural Sociology—The Strategy of Change* (Englewood Cliffs, N. J.: Prentice-Hall, 1957), p. 19.

⁵Beal, Rogers, and Bohlen, *op. cit.*

probability.⁶ Communication is hindered because concepts are lacking.

In other words, scientific methods cannot be used to determine whether there are two, three, or ten stages in the adoption process. The only test is that of utility. It is known from previous research that Wilkening has been able to communicate successfully with farmers using a three-stage conceptual framework and that Beal and Bohlen have been able to communicate using a five-stage system.

In the literature there seem to be two ways of gathering data on the use of information sources in the adoption process. One can do as Wilkening has done, asking farmers where they first hear about "new ideas in farming," where they get information that helps in deciding whether to try them out, and where they get information on details of use.⁷ This approach requires the farmer to summarize his information-seeking experience regarding technological innovations in general. The other approach is that of Beal, Rogers, and Bohlen, who have interviewed farmers about their information-seeking experience in going through the steps of adopting a specific practice.⁸ Both approaches seem to yield fairly similar findings.

METHOD

The present study grew out of an attempt to replicate Beal, Rogers, and Bohlen's work with a five-stage system. There is one major difference in research technique. Whereas the Iowa researchers forced the respondent to answer with an information source for each of the five stages, the present approach utilized a less-structured interview technique in which the farm operator in response to a series of guiding questions recounted his experience with each of three recommended practices. In other words, the Iowa researchers set up their stages prior to field work, whereas in this instance the stages, although implicit in the manner of questioning, were derived from the case history material following the field work.

The data for this study are based on interviews with a random sample of 175 dairy farmers in a western Pennsylvania county.⁹ Every farm operator was asked to give his experience with each of three recommended practices—spittle bug control, grass silage, and artificial hay drying. Other sections of the schedule included items concerning infor-

⁶This illustration is based on exploratory work undertaken by Frederick C. Fliegel. Similar difficulties were experienced in the North Central Regional Project on Decision Making (private conversation with Dale A. Knight, Department of Agricultural Economics, Kansas State College).

⁷Wilkening, *op. cit.*

⁸Beal, Rogers, and Bohlen, *op. cit.*

⁹Actually, 30 Amish farmers were also included in the sample interview survey, bringing the total random sample to 205 farm operators. The Amish interviews are not included in this analysis. The Amish material fails to reveal any differences that cannot be accounted for by lack of wheel tractors, automobiles, and electricity.

mation source exposure and evaluation, production practices, farm mechanization, characteristics of the farm operating unit, and characteristics of the farm operator.

In analyzing the farm practice adoption case histories it was found possible to classify the farm operators' experiences into five arbitrary stages roughly approximating Beal and Bohlen's stages. The five stages used in analyzing the case histories are as follows:

1. *Awareness*: The farm operator hears of the practice.
2. *Interest*: The farm operator feels the practice is a workable solution for a farm problem.
3. *Acceptance*: The farm operator feels the practice would be of value on his farm.
4. *Trial*: The farm operator tries the practice on his farm.
5. *Adoption*: The farm operator continues using the practice.

Some farmers in the sample had progressed through all five stages for a given practice. Other farmers had only progressed through one, two, three, or four stages. Thus, the data permit comparison of the information-seeking behavior of farm operators who were at different stages in the adoption process. One of the dependent variables used in this study, the progress score, is based on the latest stage attained by a farm operator in the adoption of given practice.

The categorization of information sources in the case histories was most difficult, inasmuch as most sources involved both a medium and a sender of communication. The final more or less arbitrary classification developed for this study involves the following categories: (1) magazines (farm magazines and papers), (2) radio, (3) printed extension (circular letters and bulletins), (4) oral extension¹⁰ (office calls, meetings, farm visits, method demonstrations, tours, and field days), (5) peer influence (neighbors, friends, and relatives), (6) commercial media (both printed and oral), (7) the classroom (vocational agriculture and veterans' training), and (8) a residual category, "other." Television was not given a single time as an information source in the case histories.

FINDINGS

There was not a one-to-one relationship between the citation of information sources and stages in the adoption process. Typically more than one source was mentioned within each of the earlier stages. Sometimes an operator passed through a stage without indicating fresh sources of information; in other words, earlier sources often possessed sufficient momentum to carry the farm operator through a number of later stages.

¹⁰The categories "printed extension" and "oral extension" are taken from the summary of Elizabeth R. Dickerson's study in *Agrisearch II*, No. 10 (East Lansing: Michigan National Project in Agricultural Communications, Michigan State University, Oct., 1956).

Table 1. Per cent distribution* of citations of information sources used in four stages of adopting three recommended farm practices by 175 farm operators, Lawrence County, Pennsylvania, 1957

| Stage | Information source | Spittle bug control | Grass silage | Hay finisher |
|------------|--------------------|---------------------------|-----------------|-----------------|
| Awareness | Farm magazines | 30.7 | 35.5 | 33.1 |
| | Radio | 5.2 | 2.5 | 2.3 |
| | Printed extension | 36.2 | 17.4 | 20.9 |
| | Oral extension | 10.5 | 13.8 | 11.2 |
| | Peer influence | 14.3 | 27.9 | 25.1 |
| | Commercial media | 1.4 | 0.4 | 3.7 |
| | Classroom | 1.4 | 2.5 | 3.2 |
| | Other | 0.3 | 0.0 | 0.6 |
| Total | | 100.0 | 100.0 | 100.0 |
| Interest | Farm magazines | 22.5 | 19.3 | 17.0 |
| | Radio | 2.3 | 1.8 | 0.0 |
| | Printed extension | 14.0 | 14.9 | 13.2 |
| | Oral extension | 24.8 | 26.3 | 24.5 |
| | Peer influence | 34.1 | 32.5 | 37.7 |
| | Commercial media | 0.8 | 1.8 | 5.7 |
| | Classroom | 1.6 | 0.9 | 1.9 |
| | Other | 0.0 | 2.6 | 0.0 |
| Total | | 100.0 | 100.0 | 100.0 |
| Acceptance | Farm magazines | 9.0 | 22.0 | 27.3 |
| | Radio | 0.0 | 0.0 | 0.0 |
| | Printed extension | 16.4 | 10.0 | 18.2 |
| | Oral extension | 26.9 | 20.0 | 22.7 |
| | Peer influence | 44.8 | 46.0 | 27.3 |
| | Commercial media | 1.5 | 2.0 | 4.5 |
| | Classroom | 1.5 | 0.0 | 0.0 |
| | Other | 0.0 | 0.0 | 0.0 |
| Total | | 100.0 | 100.0 | 100.0 |

*Actual frequencies of citation are shown in Table 2.

| | | | | |
|-------|-------------------|-------|-------|-------|
| Trial | Farm magazines | 4.9 | 14.8 | 12.5 |
| | Radio | 0.0 | 0.0 | 0.0 |
| | Printed extension | 52.5 | 33.3 | 29.2 |
| | Oral extension | 16.4 | 23.5 | 12.5 |
| | Peer influence | 6.6 | 25.9 | 29.2 |
| | Commercial media | 16.4 | 2.5 | 16.7 |
| | Classroom | 3.3 | 0.0 | 0.0 |
| | Other | 0.0 | 0.0 | 0.0 |
| | Total | 100.0 | 100.0 | 100.0 |

Table 1 indicates the relative use of the information sources for the first four stages of the adoption process for each of the three practices. This study, in line with previous studies, shows that mass media (magazines, radio, and printed extension) are very important during the awareness stage. As in several previous studies, few farmers mentioned radio. Neighbors and friends are mentioned a great number of times as an awareness source for the hay dryer. Barn hay dryers, which are being actively promoted by electric power companies, elicited a larger number of commercial references in the awareness stage than either of the other practices. In the interest stage, the mass media are cited much less frequently and face-to-face sources (oral extension and peer influences) of farm information are mentioned proportionately more frequently. The same observations hold for the acceptance stage, where peer influences (friends, neighbors, and relatives) also become more important. In the trial stage printed and oral extension sources regain their importance, when questions of when and how to apply the practice become crucial. Commercial media also have some importance at this stage.

Respondents were not pressed for information sources after the trial stage because the results of a successful trial were considered self-evident by the farm operator. However, there is no reason to disagree with Beal and Bohlen's suggestion that "extension and peer influences play a part in interpreting trial results to farmers."¹¹

The findings presented thus far tend to corroborate previous research findings. Percentage variations among practices in references to sources suggest that the use of sources at a given stage varies somewhat with the nature of the practice. The next step in the analysis was to compare the mean progress scores of respondents who cited different information sources at a given stage (see Table 2). Farmers who cited mass media sources in the awareness stage seem to have about average progress scores. The radio audience seems to have below

¹¹Beal and Bohlen, *op. cit.*, pp. 5-6.

Table 2. Citations of, and mean progress scores for, information sources used in the stages of adopting three recommended farm practices by 175 farm operators, Lawrence County, Pennsylvania, 1957

| Stage | Information source | Spittle bug control | | Grass silage | | Hay finisher | |
|------------|--------------------|---------------------|-----------|------------------|-----------|------------------|-----------|
| | | No. of citations | \bar{x} | No. of citations | \bar{x} | No. of citations | \bar{x} |
| | | progress score* | | progress score | | progress score | |
| Awareness | Magazine | 88 | 3.24 | 98 | 3.55 | 116 | 1.72 |
| | Radio | 15 | 2.87 | 7 | 2.71 | 8 | 1.63 |
| | Printed extension | 104 | 3.13 | 48 | 3.33 | 73 | 1.81 |
| | Oral extension | 30 | 3.73 | 38 | 4.05 | 39 | 1.90 |
| | Peer influence | 41 | 2.27 | 77 | 3.18 | 88 | 1.16 |
| | Commercial | 4 | | 1 | | 13 | 1.31 |
| | Classroom | 4 | | 7 | 3.71 | 11 | 1.45 |
| | Other | 1 | | 0 | | 2 | |
| | Total | 287 | 3.11 | 276 | 3.46 | 350 | 1.59 |
| Interest | Magazine | 29 | 3.59 | 22 | 4.41 | 9 | 2.56 |
| | Radio | 3 | | 2 | | 0 | |
| | Printed extension | 18 | 4.56 | 17 | 4.82 | 7 | 2.86 |
| | Oral extension | 32 | 4.59 | 30 | 4.73 | 13 | 3.69 |
| | Peer influence | 44 | 3.80 | 37 | 3.92 | 20 | 3.60 |
| | Commercial | 1 | | 2 | | 3 | |
| | Classroom | 2 | | 1 | | 1 | |
| | Other | 0 | | 3 | | 0 | |
| | Total | 129 | 4.09 | 114 | 4.37 | 53 | 3.40 |
| Acceptance | Magazine | 6 | 4.67 | 11 | 5.00 | 6 | 4.83 |
| | Radio | 0 | | 0 | | 0 | |
| | Printed extension | 11 | 4.82 | 5 | 5.00 | 4 | |
| | Oral extension | 18 | 4.83 | 10 | 5.00 | 5 | 5.00 |
| | Peer influence | 30 | 4.93 | 23 | 4.78 | 6 | 5.00 |
| | Commercial | 1 | | 1 | | 1 | |
| | Classroom | 1 | | 0 | | 0 | |
| | Other | 0 | | 0 | | 0 | |
| | Total | 67 | 4.87 | 50 | 4.90 | 22 | 4.86 |

*Mean progress scores are not shown when based on less than 5 citations.

| | | | | | | |
|-------|-------------------|----|------|------|------|------|
| Trial | Magazine | 3 | 12 | 4.75 | 3 | |
| | Radio | 0 | 0 | | 0 | |
| | Printed extension | 32 | 5.00 | 27 | 4.89 | 7 |
| | Oral extension | 10 | 5.00 | 19 | 5.00 | 3 |
| | Peer influence | 4 | | 21 | 4.95 | 7 |
| | Commercial | 10 | 5.00 | 2 | | 4 |
| | Classroom | 2 | | 0 | | 0 |
| | Other | 0 | | 0 | | 0 |
| | Total | 61 | 5.00 | 81 | 4.90 | 24 |
| | | | | | | 4.96 |

average progress scores. Farmers who mentioned oral extension, though proportionately few in the awareness stage, tend to have above average progress scores. Farmers who cited peer influences in this stage seem to have made below average progress in adopting a practice. In the interest stage those citing printed and oral extension continue to have higher progress scores than those mentioning peer influences. Mean progress scores for different information sources become very similar at the acceptance and trial stages.

Summing up Table 2: there seems to be evidence that farm operators relying upon friends and neighbors for information in the early stages of the adoption process tend to have lower progress scores than farmers who do not cite peer influences. Another significant observation is that there is no key information source for a given stage. It should also be noted that certain mass communication media such as radio and television seem to be underexploited in the early stages of adoption.

DEVELOPMENT OF A MODEL

This study, using somewhat different methods, has affirmed the findings of earlier surveys of the use of information sources in farm practice adoption. On a deductive basis, it seems possible to offer some explanations for the results observed.¹² These explanations hinge about five considerations: (1) institutionalization of information sources, (2) the temporal sequence of information sources, (3) the possibility of negative recommendations, (4) scheduling limitations of the sources, and (5) the need for local legitimization.

¹²Wilkening, *op. cit.*, is also concerned with the structural and operational characteristics of farm information sources. Copp and Wilkening, in a later paper, discuss the situational context of the sources and their corresponding relative advantages in serving the functions of communication (James H. Copp and E. A. Wilkening, "An Examination of Information Sources and Stages of Farm Practice Adoption," (unpublished MS, Department of Rural Sociology, University of Wisconsin, 1957).

It should be recognized that certain farm information sources reach large audiences with the most recent technological advances because they have become institutionalized as disseminators of information. This seems to be recognized for farm papers and magazines, which exist solely to keep farmers up to date.

If it is true for farm magazines, it is even more true for professional agriculturalists, whose formal responsibility is promoting technological changes. Part of the job of the extension agent is to keep informed, and the Extension Service provides resources to help him. He has institutionalized channels for disseminating his information. The office, the meeting, the tour, and the result demonstration are legitimate and socially accepted facilities for the diffusion of information.

The neighboring farmer does not have these institutional advantages and resources. No one hires him to keep other farmers up to date. He has few resources for communication other than informal conversation. The number of people with whom any given farmer can communicate is small. Communication of technological innovations is not a major role expectation for the local farmer.

There is also a temporal sequence in which information about an innovation becomes available to the various media. The mass media are strategically located for wide dissemination of new discoveries at an early date. The professional agriculturalist typically gets his information from some type of mass media. The layman (friend, neighbor, or relative) gets his information after it has percolated down from the mass media or extension. The early adopter of necessity must rely on the mass media and professionals, because local farmers will not have heard of or tried out the new practice.

With regard to valuation, the mass media and professional sources of information are positive in their recommendations about a new practice. A neighboring farmer may color his transmission of information with his personal evaluations. A local farmer may also have tried the innovation and failed to obtain satisfactory results. Thus farmers who cite friends and neighbors as sources of information are more likely to have received negative reactions to a practice than farmers who got their information from the mass media or technical agriculturalists.

The various information sources are also differentially advantaged in their accessibility. For instance, the farm programs on radio and television occur only at definite times. There are no rebroadcasts. The same scheduling limitation holds for meetings, demonstrations, field days, tours, and office calls. On the other hand, printed media may be read and reread at the farmers' convenience. The casual exchange of information with friends and neighbors is also free from scheduling limitations.

Innovations recommended by the mass media are necessarily general

and nonspecific to local areas. The average farm operator needs reassurance that the practice is meant for him. Here the county agent and the neighbor have a decided advantage in interpreting the practice in terms of local conditions. There is some evidence in this study that farmers with high progress scores depend on local professional agriculturalists for legitimization whereas farmers with low progress scores rely more on the successes and failures of their neighbors.

Taking these five considerations as a point of departure, one can make some predictions as to the selection of information sources that would be used by farmers with high progress scores. In other words, it is possible to construct an ideal model of information seeking for the various stages of the adoption process.¹³ In the awareness stage magazines and printed extension would seem to be the most logical sources for first information about a new development. In the interest stage printed and oral extension should be the best source for gaining more extensive legitimating information about a new practice. In the acceptance stage the farm operator has already conceded that the practice may be a good idea. He now needs to be persuaded that the practice applies to his farm. Personal influence in face-to-face situations is one of the most persuasive change forces known. Therefore, oral extension and peer group influence would be expected to be the most effective sources at this stage.

Farmers in the trial stage have already made the decision that the practice would be applicable to their own farms. The major problem is a practical one regarding details of application and operation. Thus, sources furnishing detailed instructions ought to be the most rational selection. Such sources would be printed extension, farm visits, demonstrations, manufacturers' instructions, and neighbors who have already adopted the practice.

TESTING THE MODEL

This model was applied to the data of the study. The results are shown in Table 3. The direction of the differences is consistent with the model's predictions in eight out of nine instances for the first three stages. A signs test indicates that the probability of securing as good a fit between model and data through the operation of random factors is less than one in fifty. Although the variation in progress scores for the trial stage is too limited to permit the comparison of means, it is noteworthy that over 80 per cent of the farm operators make the expected selection of sources in this stage for each of the practices. The evidence in Table 3 suggests that the farm operators who select

¹³Since the five considerations involved in the model do not imply logical closure, it is likely that later investigations will lead to additional components and reorganization of the present components. The lack of logical closure may also permit the construction of a somewhat different ideal model of information seeking on the basis of the present five considerations.

sources in conformity with the model make the greatest progress toward the adoption of a practice.

Table 3. Comparison of mean progress scores for expected and other sources of farm information for four stages in the adoption of three recommended farm practices

| Stage | Source | Spittle bug control | | Grass silage | | Hay dryer | |
|-----------------------|---|---------------------|-----------------------------|--------------|-----------------------------|-----------|-----------------------------|
| | | N | \bar{X} Progress score | N | \bar{X} Progress score | N | \bar{X} Progress score |
| I Awareness | | | | | | | |
| | Magazines & printed extension | 137 | 3.34 | 105 | 3.55 | 127 | 1.74 |
| | Other | 35 | 2.49 | 64 | 3.27 | 43 | 1.40 |
| | Difference in expected direction | | yes | | yes | | yes |
| II Interest | | | | | | | |
| | Printed & oral extension | 50 | 4.52 | 41 | 4.73 | 17 | 3.65 |
| | Other | 53 | 3.64 | 49 | 3.92 | 22 | 3.27 |
| | Difference in expected direction | | yes | | yes | | yes |
| III Acceptance | | | | | | | |
| | Oral extension & peer influence | 44 | 4.89 | 30 | 4.83 | 8 | 5.00 |
| | Other | 13 | 4.54 | 11 | 5.00 | 8 | 4.63 |
| | Difference in expected direction | | yes | | no | | yes |
| IV Trial | | | | | | | |
| | Printed instructions and/or demonstration | 66 | 4.97 | 66 | 4.89 | 14 | 4.93 |
| | Other | 6 | 5.00 | 11 | 4.91 | 3 | 5.00 |

In the preceding discussion, it was suggested that peer influences would be less effective for the early stages of the adoption process because of their relative lateness in the temporal order of media and because of the possibility of negative information. The data of this study also permit the testing of this expectation. Table 4 shows that in five out of six comparisons farmers who mention other farmers as sources of information have significantly lower progress scores than farmers who do not cite peer influence for the awareness and interest stages.

Table 4. Progress scores classified by presence or absence of peer information sources in awareness and interest stages for three recommended farm practices

| Stage | Practice | Peers cited | | Peers not cited | | Significance of difference |
|------------------|---------------------|-------------|-----------------------------|-----------------|-----------------------------|----------------------------|
| | | N | \bar{X} Progress score | N | \bar{X} Progress score | |
| Awareness | | | | | | |
| | Spittle bug control | 41 | 2.27 | 131 | 3.45 | P <.001 |
| | Grass silage | 77 | 3.18 | 92 | 3.66 | P <.05 |
| | Hay dryer | 88 | 1.16 | 82 | 2.16 | P <.001 |
| Interest | | | | | | |
| | Spittle bug control | 44 | 3.80 | 59 | 4.27 | P <.05 |
| | Grass silage | 37 | 3.92 | 53 | 4.55 | P <.05 |
| | Hay dryer | 20 | 3.60 | 19 | 3.26 | n.s. |

The basic problem for the farmer in a psychological sense, during the awareness and interest stages, is building a cognitive structure of the practice. The data in Table 4 show that peer influences are less effective than other influences in developing a cognitive structure leading to the attainment of later stages in the adoption process. Learning of a practice from relatives and other farmers is somewhat analogous to lifting oneself by one's bootstraps, for ego's peers are not likely to be much better informed than ego. The farmer who learns from his peers is learning second- or third-hand information, which may have lost much of its original accuracy.

JOHN C. BELCHER

Acceptance of the Salk Polio Vaccine

This study tests the hypothesis that the acceptance of an innovation in a medical care practice follows the same patterns as the acceptance of approved farm practices. The health practice used in testing the hypothesis is the acceptance of the Salk polio vaccine.

The data for the study were secured from a representative sample of 701 households in Greene and Hancock counties located in the Piedmont section of Georgia.

Contrary to expectations there were not the relationships between individuals receiving polio vaccine and the sociocultural factors previous studies had indicated were associated with the acceptance of approved farm practices. One unexpected result was the significantly higher percentage of Negro children receiving the Salk vaccine than whites—a result that could account for most of the other unexpected associations. A more intensive analysis of data and special interviews were made to find an explanation for the greater acceptance of polio vaccine among nonwhites than whites.

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THE purpose of this study is to investigate the acceptance of the Salk polio vaccine for the population of two Piedmont counties in Georgia. The hypothesis to be tested is that the acceptance of an innovation in medical care practice follows the same patterns as the acceptance of approved farm practices.

The data for this study were obtained from a representative sample of the population of Greene and Hancock counties located in the Piedmont section of central Georgia. The data were secured from a study of the use of health care services and enrollment in voluntary health insurance programs. This study was sponsored by the University of Georgia in co-operation with the Agricultural Marketing Service of the United States Department of Agriculture. The interviewing was done in the fall of 1956, only a few months after the Salk polio vaccine had been made generally available to children and youth.

The unit used in the present study is the household. In the 1956 survey 701 households were interviewed. Of this sample, there were 372 households with children from the ages of one through 19 years.

Information was not available from seven of these homes on whether any member of the family had or had not been immunized against polio. The present analysis is based on the information in the remaining 365 schedules. At the time of the survey all children in Georgia from the age of one through 19 were eligible for free Salk vaccine through the county health units.

RELATED STUDIES

For several years sociologists have been making studies of the acceptance and diffusion of approved farm practices in this country. Perhaps the best-known of the earliest studies was the one by Bryce Ryan and Neal Gross on "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," which was published in 1943.¹ The complete study was subsequently published as an agricultural experiment station bulletin.² In this study several variables were isolated which were related to early acceptance of the new seed. Other studies by Ryan, Gross, Hoffer, Wilkening, Coleman, Taves, and Marsh have investigated the acceptance or adoption of recommended farm practices.³

The Subcommittee on the Diffusion and Adoption of New Farm Practices of the Rural Sociological Society in 1952 summarized the principal findings of research to that time in a statement relevant to the present study:

With a few exceptions these studies find that farm ownership, education, income, size of farm, and social participation are positively associated with the adoption of improved farm practices. The association of age is not definitely established.⁴

These and similar factors are consistently related to the acceptance of recommended farm practices. Thus it is to be anticipated that the same variables would be related to the acceptance of other innovations and that high income groups, home owners, those with more education,

¹Rural Sociology, VIII, 15-24.

²Bryce Ryan and Neal Gross, *Acceptance and Diffusion of Hybrid Seed Corn in Two Iowa Communities* (Iowa Agr. Expt. Sta. Bull. 372; Ames, 1950).

³Bryce Ryan, "A Study in Technological Diffusion," *Rural Sociology*, XIII, 273-285; Neal Gross, "The Differential Characteristics of Accepters and Non-Accepters of an Approved Agricultural Practice," *Rural Sociology*, XIV, 148-156; Charles Hoffer, *Acceptance of Approved Farm Practices among Farmers of Dutch Descent* (Michigan Spec. Agr. Expt. Sta. Bull. 316; East Lansing, 1942); Eugene Wilkening, "A Sociopsychological Approach to the Study of the Acceptance of Inoculations in Farming," *Rural Sociology*, XV, 352-364; Neal Gross and Marvin J. Taves, "Characteristics Associated with Acceptance of Recommended Farm Practices," *Rural Sociology*, XVIII, 321-327; and C. Paul Marsh and A. Lee Coleman, "The Relation of Farmer Characteristics to the Adoption of Recommended Farm Practices," *Rural Sociology*, XX, 289-296.

⁴Subcommittee of the Rural Sociological Society, *Sociological Research on the Diffusion and Adoption of New Farm Practices* (Kentucky Agr. Expt. Stat. RS-2; Lexington, June, 1952).

those with a record of high social participation, and the like would be the first to accept a new discovery in medicine, such as the Salk polio vaccine.

Alvin L. Bertrand and Clarence A. Storla, Jr., found in Louisiana that

knowledge and opinions about heart disease are closely associated with certain socio-cultural factors. In general urbanites were more informed than ruralites, whites more informed than Negroes, younger informants were more informed than older informants, the more highly educated informants were more informed than those with less formal schooling, and persons with higher incomes were more informed than persons in the lower income brackets.⁸

It is supposed that those more informed about a recommended health practice would be first to adopt it.

A recent study of the acceptance of the new polio vaccine was made prior to the mass field trials in 1954. This study showed a direct relationship between parents giving consent for their children to participate in the trials and socioeconomic status, as measured by an index based on occupation of the male head of the household, education of the male head of the household, and education of the mother.⁹ The author of this study further stated that practitioners in the field of public health generally "anticipate that preventive programs will encounter the greatest opposition in the strata of lower socio-economic status, except where specific vested interests of other groups are involved."¹⁰

In another study based on the same data used in the present paper, significant relationships were found to exist between the use of dentists, physicians, and hospitals and the sociocultural factors mentioned in the above studies. Consequently, there seems to be no reason to believe those who accept polio vaccine would not have similar characteristics to those who accept recommended farm, or other, practices.

ANALYSIS

Each informant in the field survey in Greene and Hancock counties was asked, "Has any member of your household ever had one or more polio shots?" Of the 701 households there were 365 with children in the ages eligible for free vaccine and who gave "Yes" or "No" answers to this question. The subsequent analysis is based on a tabulation of these 365 schedules. Comparisons were made between use or nonuse of "polio shots" and (1) age of male head, (2) age of female head, (3) residence, (4) family income, (5) education of male head, (6) education

⁸*Lay Knowledge and Opinions about Heart Disease in Selected Areas of Louisiana* (New Orleans: Louisiana Heart Association, 1955), p. ix.

⁹Leila Calhoun Deasy, "Socio-Economic Status and Participation in the Poliomyelitis Vaccine Trial," *American Sociological Review*, XXI, 185-191.

¹⁰*Ibid.*, p. 186.

of female head, (7) possession of auto or truck, (8) reading of magazines or daily newspaper, (9) possession of television, (10) social participation score (Chapin scale), (11) home tenure, (12) socioeconomic status (Sewell short scale), and (13) color. To determine the relationship between these sociocultural factors, which previous studies have shown to be related to the adoption of approved farm practices, four-fold tables were prepared and chi squares computed between these factors and whether or not members of each sample family had or had not been vaccinated against polio. A chi square of 3.8 is significant at the 5 per cent level and one of 6.6 is significant at the 1 per cent level.

Contrary to expectations, very few of the chi squares were significant. For many of the comparisons there was no relationship between the sociocultural factor and receiving polio vaccine. Several times when there was a significant association, it was in the opposite direction from that hypothesized (see Tables 1-13). In the present study it was found that young heads have greater use of polio vaccine for members of their families than is true in households with older heads. A significant relationship was found between polio immunization and the age of the heads of the household, both male and female. Yet, age is a factor which other studies have indicated is not consistently related to the acceptance of practices. Analysis of other data reveals there is practically no association between the families accepting polio shots and education, income, and tenure.

Even items related to communications and to contacts with those outside the home, such as taking newspapers, having television sets, and owning an automobile or truck, were not associated with the use of the Salk polio vaccine. Practically all previous studies indicate that variables of this nature were highly associated with the acceptance of new farm practices.

Of all the comparisons made, the only one that is significant in the expected direction other than the comparison by age of family heads is the social participation score, which is significant at the 1 per cent level. At the other extreme socioeconomic status and color are extremely significant, but *the association is in an opposite direction than expected*. This result is contrary to that found in previous studies and, of course, contrary to the hypothesis advanced. In Greene and Hancock counties those with low socioeconomic scores were immunized in greater numbers than those with high; open country residents were vaccinated in greater numbers than those living in towns; and non-whites had a greater percentage receiving the polio injections than whites. This difference by color was most unexpected. In the counties where the sample was taken, the Negroes had less education, lower income, and lower socioeconomic status, were more often renters, and were more rural than whites. It would, therefore, appear that a more intensive analysis of the relationship of color with the acceptance of

the polio vaccine might indicate the reason for the unexpected associations.

A. A general knowledge of the course of events as publicized in the newspapers could throw some light on why there is so much difference between the acceptance rates of whites and nonwhites. The principal stages in the development and subsequent release of the Salk polio vaccine to the public are as follows:

1. In the spring of 1954 mass field trials of Salk polio vaccine were made. The last of March and early April, 1955, there were "leaks" appearing in newspapers and magazines that the experiment showed the vaccine to be effective in combating polio.

2. On the morning of April 12, 1955, press conferences were scheduled to announce the results of the polio field tests. The evening of April 12 and morning of April 13, 1955, were marked by the headlines in newspapers throughout the country noting that the vaccine had been declared safe and effective. Newspapers throughout the country carried stories of this event as did numerous radio and television programs.

3. Parents throughout the nation were vitally concerned with when their children could receive polio shots. On April 13, 1955, the Atlanta *Journal* headline read "Calls for Vaccine Swamping Health Centers in State." The National Foundation for Infantile Paralysis was to give free vaccine to all first and second graders in the United States. Vaccine began to arrive in Georgia for this group on April 16, only four days after the announcement that the vaccine was successful.

4. Two weeks after the announcement that the vaccine was effective, safe, and potent, the Atlanta *Journal* carried a first-page article stating that six cases of polio had occurred to children inoculated with vaccine. Later other stories appeared stating that more cases of polio were developing among children receiving the vaccine. In early May, a ban was placed on further inoculation. Finally, on May 14, the Atlanta *Constitution* headlined "U. S. Okays 11 Batches of Vaccine." This was one week after inoculations had been halted. The next day articles appeared that sufficient vaccine was not available to complete second shots, but, at the same time, many parents were reluctant to let their children receive the second shots.

The confusion regarding the safety of the new vaccine was related to its acceptance according to the 1956 Annual Report of the Georgia Department of Public Health.

In 1956, polio immunization did not regain the appeal lost during the period of uncertainty over vaccine safety.

The trend in polio immunizations was evident about mid-year when approximately one half of those eligible had received two shots. Up to this point vaccine supplies had barely kept pace with demand but although the age

limit was raised to 20 years interest lagged as later supplies became available. Only about 40 per cent of those eligible received first shots in 1956. This was approximately the same as in 1955.

A large percentage of the colored families in the survey counties do not take newspapers, magazines, have television sets, nor own automobiles or trucks. Consequently, it seems probable that a large percentage of the nonwhites would have been unfamiliar with the furor regarding the vaccine. If this is true, whites might well have been more reluctant to let their children receive the vaccine than nonwhites.

B. In the course of the interviewing, each informant was asked where he first heard of polio shots. Of the 191 white families included in the present sample, 159 stated that they heard of polio shots for the first time through various mass media of communication including newspapers, magazines, radio, or television. On the other hand, of the 254 colored families interviewed, only 99 heard of polio shots for the first time through these mass media. By far the most important single source of information about polio vaccine for the nonwhites was through the school or school children. Nearly 40 per cent, or 94 of the nonwhites stated they heard of the polio vaccine for the first time from this source. Among the whites only 23 gave a similar answer. As the subsequent analysis will show, it appears very likely that many nonwhite families did not hear of the Salk vaccine until several months after the earlier period of uncertainty about its safety. Consequently, there would never have been any occasion for them to question its use. (See Table 14, which shows the first source of information given by whites and nonwhites for having heard of polio vaccine.)

That whites were somewhat more reluctant than nonwhites to support the use of the vaccine is indicated by a tabulation of the answers of the sample households to the question, "Do you think having polio shots is a good idea?" Of the 191 white households, six answered the question with "No." Among the 254 nonwhites, four informants gave this answer. One nonwhite stated she had "never heard of them." Seventeen whites and 22 nonwhites answered the question with "Don't know." One parent reported, "Am afraid to get them, but afraid not to—will probably get them next summer." Most informants in the area did think the shots were a good idea. The percentage was somewhat greater for nonwhites than for whites. It may be noted that three of the 23 whites not clearly expressing approval of the vaccine program had their children immunized. A comparable figure among nonwhites was 13 out of 26. These figures do indicate, but not conclusively, a slight tendency for whites to be less favorably inclined toward the immunization program.

C. An unanswered question is why poorly educated, isolated, low-income nonwhites accepted this new innovation so readily. Several interviews were made with whites and nonwhites in the two counties

concerned in an effort to answer this question. Several relevant factors may first be mentioned: first, polio immunizations in the state of Georgia were free to all children of specified ages through the health departments. In both counties all immunizations tended to be made in the public health clinics. Among the nonwhites there has been through the years much more use of public health facilities than by the whites. There is a general feeling among many whites in the state of Georgia that the public health service is provided only for Negroes and the poorest white groups. Consequently, some reluctance might be present in the minds of many whites to accept vaccine at the health department.

D. In both counties provision was made for the school buses to bring nonwhite children to the health department for immunizations. The entire student body would be brought in on a certain day for inoculation. Among whites provision for bus transportation was much less complete.

E. Among the special individuals interviewed, both whites and nonwhites, to ascertain why the nonwhites so readily accepted the polio vaccine, answers from the whites were almost wholly different from those given by the nonwhites. In one county especially, it was stated by the whites that the success of the polio immunization program could be very largely attributed to interest of the county school superintendent in the program. He made it possible for school bus transportation to be provided for all nonwhites. Provision was made to transport white pupils, but not on a systematic basis. The efforts of the Jeans's workers, public health nurses, and visiting teachers were almost invariably mentioned by whites. The general opinion was that, since these white persons had co-operated with the nonwhites through the years, the nonwhites knew and appreciated their interest, and, when these white individuals tried to push a program which was of great value to the nonwhites, the nonwhites readily accepted it. Among the nonwhites interviewed, no individual efforts seemed to stand out. Rather, the agreement was that the nonwhites had seen the effects of polio. They knew how a small child could be crippled for life or even die of the disease; so when a vaccine was perfected, they readily accepted it. It was also pointed out that during the annual March of Dimes campaign a Negro teacher had taken a carload of women, each from a different section of one county, to Tuskegee, where they saw children suffering from polio. They returned to their own communities and described the disastrous affects of the disease. The interviewees stated that after individuals heard these descriptions, they were only too glad to have their children receive polio shots.

F. Many of those interviewed described the efforts of these colored school teachers in both counties to push the vaccine program. Teachers told the colored parents about the new vaccine and tried to convince the parents that their children should be immunized. In most cases it

appears that an attempt was made to "sell" the vaccine, rather than to force acceptance of it. There were some reports, however, of children being told they would not be promoted until they received their shots. Apparently such statements were made by individual teachers trying to have 100-per-cent acceptance in their classrooms. There was considerable rivalry among classes and schools in trying to obtain 100-per-cent coverage. No reports were heard of such extreme interest in the polio immunization campaign among the white teachers or among the white schools.

G. Nonwhite ministers from the pulpit and in individual contacts attempted to push the polio vaccine. No such widespread efforts seemed to be present among the whites. Through the years there has been a tendency for the public health authorities to work through the colored ministers. It is only through the church that many nonwhite families have any contacts with the outside world. It would seem that this may be the reason why the social participation score was related in the expected direction with the acceptance of the polio vaccine.

CONCLUSIONS

In this study thirteen sociocultural factors, which previous studies had indicated were related to the acceptance of recommended farm practices, were compared with whether members of families had or had not received polio vaccine at the time of the survey on October 19, 1956. The most significant comparisons were contrary to expectations, particularly in that Negroes were immunized for polio at much greater rates than whites. The reasons why this differential existed appear to be, first, that the uncertainty regarding the safety of the polio vaccine made urban whites with low socioeconomic status somewhat reluctant to try the new vaccine during the first months of its availability, whereas the nonwhites were not reluctant probably because they never were aware of the furor concerning the safety of the vaccine. Second, the polio immunization program in Georgia has very largely been under local control, with health districts using various procedures. The program in the two counties studied was successful in reaching many groups, especially the nonwhite segment, who would not ordinarily be expected to respond to new practices.

The present study has not proved the hypothesis with which it started, nor can it be rejected. Rather, it appears that it must be modified to read as follows: The acceptance of an innovation in medical care practices, specifically immunization for polio, would follow the same patterns as the acceptance of approved farm practices providing there is no question regarding the utility of the practice and there are no special programs causing other groups to accept the innovation first. Without doubt this paper does demonstrate how certain groups ordinarily considered out of reach of an action program

can nevertheless be reached. Only when nature is allowed "to take its course" will the acceptance of approved farm, or other, practices follow the patterns so often described.

Table 1. Relationship of age of male head to acceptance of polio vaccine

| Age of male head | Has any member of your household ever had one or more polio shots? | | |
|------------------------|--|------------|------------|
| | Yes | No | Total |
| Under 45 | 156 | 49 | 205 |
| Over 45 | 101 | 57 | 158 |
| Total | 257 | 106 | 363 |

$\chi^2 = 6.4$.

Table 2. Relationship of age of female head to acceptance of polio vaccine

| Age of female head | Has any member of your household ever had one or more polio shots? | | |
|------------------------|--|------------|------------|
| | Yes | No | Total |
| Under 45 | 211 | 61 | 272 |
| Over 45 | 90 | 60 | 150 |
| Total | 301 | 121 | 422 |

$\chi^2 = 14.6$.

Table 3. Relationship of residence to acceptance of polio vaccine

| Residence | Has any member of your household ever had one or more polio shots? | | |
|-------------------------|--|------------|------------|
| | Yes | No | Total |
| Open country | 215 | 71 | 286 |
| Village, city | 96 | 56 | 152 |
| Total | 311 | 127 | 438 |

$\chi^2 = 7.0$.

Table 4. Relationship of family income to acceptance of polio vaccine

| Family income in 1955 | Has any member of your household ever had one or more polio shots? | | |
|-------------------------|--|-----|-------|
| | Yes | No | Total |
| Under \$2,500 | 196 | 77 | 273 |
| Over \$2,500 | 77 | 34 | 111 |
| Total | 273 | 111 | 384 |

 $\chi^2 = .23.$

Table 5. Relationship of education of male head to acceptance of polio vaccine

| Education of male head | Has any member of your household ever had one or more polio shots? | | |
|---------------------------|--|----|-------|
| | Yes | No | Total |
| 6 years or less | 129 | 50 | 179 |
| 7 years or more | 117 | 47 | 164 |
| Total | 246 | 97 | 343 |

 $\chi^2 = .02.$

Table 6. Relationship of education of female head to acceptance of polio vaccine

| Education of female head | Has any member of your household ever had one or more polio shots? | | |
|---------------------------|--|-----|-------|
| | Yes | No | Total |
| 6 years or less | 113 | 39 | 152 |
| 7 years or more | 186 | 80 | 266 |
| Total | 299 | 119 | 418 |

 $\chi^2 = .93.$

Table 7. Relationship of possession of auto or truck to acceptance of polio vaccine

| Household has auto &/or truck | Has any member of your household ever had one or more polio shots? | | |
|----------------------------------|---|-----|-------|
| | Yes | No | Total |
| Neither | 108 | 33 | 141 |
| One or both | 203 | 94 | 297 |
| Total | 311 | 127 | 438 |

 $\chi^2 = 3.16.$ *Table 8.* Relationship of taking daily newspapers or magazine to acceptance of polio vaccine

| Take daily newspapers | Has any member of your household ever had one or more polio shots? | | |
|-----------------------|---|-----|-------|
| | Yes | No | Total |
| No | 179 | 67 | 246 |
| Yes | 127 | 57 | 184 |
| Total | 306 | 124 | 430 |

 $\chi^2 = .72.$ *Table 9.* Relationship of possession of television to acceptance of polio vaccine

| Have television | Has any member of your household ever had one or more polio shots? | | |
|-----------------|---|-----|-------|
| | Yes | No | Total |
| No | 192 | 76 | 268 |
| Yes | 119 | 51 | 170 |
| Total | 311 | 127 | 438 |

 $\chi^2 = .14.$

Table 10. Relationship of social participation to acceptance of polio vaccine

| Social participation score | Has any member of your household ever had one or more polio shots? | | |
|----------------------------|--|-----|-------|
| | Yes | No | Total |
| Under 15 | 110 | 73 | 183 |
| Over 15 | 201 | 54 | 255 |
| Total | 311 | 127 | 438 |

 $\chi^2 = 18.1$.*Table 11.* Relationship of home tenure to acceptance of polio vaccine

| Home tenure | Has any member of your household ever had one or more polio shots? | | |
|-------------------------|--|-----|-------|
| | Yes | No | Total |
| Owner | 137 | 66 | 203 |
| Renter, other | 174 | 61 | 235 |
| Total | 311 | 127 | 438 |

 $\chi^2 = 2.3$.*Table 12.* Relationship of socioeconomic status to acceptance of polio vaccine

| Socioeconomic score | Has any member of your household ever had one or more polio shots? | | |
|---------------------|--|-----|-------|
| | Yes | No | Total |
| Under 70 | 159 | 36 | 195 |
| Over 70 | 149 | 91 | 240 |
| Total | 308 | 127 | 435 |

 $\chi^2 = 19.7$.

Table 13. Relationship of color to acceptance of polio vaccine

| Color | Has any member of your household ever had one or more polio shots? | | |
|--------------------|---|-----|-------|
| | Yes | No | Total |
| White | 115 | 72 | 187 |
| Nonwhite | 196 | 55 | 251 |
| Total | 311 | 127 | 438 |

 $\chi^2 = 14.3.$

Table 14. Source of first information regarding polio vaccine by color

| Source of information | Color | |
|---|-------|----------|
| | White | Nonwhite |
| Newspapers and magazines | 77 | 29 |
| Radio and/or television | 60 | 64 |
| Newspapers or magazines plus radio and/or television | 22 | 6 |
| Public health doctor or nurse | 0 | 33 |
| Doctor | 3 | 3 |
| Organizations or meetings | 0 | 4 |
| School or school children | 23 | 94 |
| Never heard of it | 0 | 1 |
| Don't know or no answer | 6 | 20 |
| Total | 191 | 254 |

DAVID E. LINDSTROM

Diffusion of Agricultural and Home Economics Practices in a Japanese Rural Community

In Japan agricultural techniques have advanced as far as in any Oriental country. It is important, therefore, to learn how effective their new approach, not to "force anything on people against their will," has been in getting farmers and homemakers to accept new practices.

In a study of the acceptance of farming and homemaking practices, it was found that the practices adopted most often were those requiring changes in techniques or operations and did not require changing the enterprise. Such adoptions were accompanied by favorable attitudes toward the practice. Attitudes toward adopting practices were influenced by mass media; but the chief influence causing adoption was the observation of good results obtained by other farmers and the urging of extension advisors and neighbors.

Implications for countries in which adult educational systems have been developed are that although conditioning influences can come through mass media, those leading to adoption must come from agents in the community who have gained the confidence of the people. Hence, technological training is not enough; the agents need training in how to analyze local situations and how to work with people and their groups.

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THE acceptance of new ways of farming in East Asia is of world-wide concern, for in most areas of this part of the world food production per person is only a fraction of what it could be if the most modern techniques were used.¹ Even in Japan, where agricultural techniques have advanced as far as in any Oriental country, improvement of techniques could result in increased production, cutting down materially

¹*Agriculture in the World Economy* (Rome: Food and Agriculture Organization, Nov., 1955), p. 23. According to this publication, "in the Far East food production per head is only about half the world average."

her need to import food and making significant progress toward food self-sufficiency for the country.²

It has been well established that the introduction of new farming techniques is a technological change still highly influenced by the social and cultural conditions of rural life.³ This is especially true in an Oriental society, where consanguine family controls and familistic and feudalistic systems persist, unlike Western society, where the conjugal family and contractual type of society is more prevalent.

The study of diffusion⁴ as related to new farm practices has held the attention of rural sociologists for more than a decade; the results of a number of studies are now available on this social process.⁵ But studies of this nature have been made mostly in the United States. Studies on cultural change in other parts of the world have been largely anthropological;⁶ these have pointed up how much more, in Oriental cultures, for example, economic behavior is influenced by social relations, and by the systems of social organization, customs, and mores to which the individual in these cultures is subjected, than is true in Western cultures.

It is significant that in a society which has been reputed to be so feudalistic, some progress has been made in developing, among government and other leaders, faith in farmer's ability to think for himself. Of the several approaches, therefore, that can be made in the study of acceptance of new practices, the one related to adult education seems most appropriate at this period of change in East Asia.⁷ Because of the fact that in Japan the official governmental purpose of the new postwar extension service is primarily educational—"never

²*Agriculture in Asia and the Far East* (Rome: Food and Agriculture Organization, Oct., 1953), p. 37. A five-year program was started in 1953 "for the promotion of food self-sufficiency." It was based on the fact that 70 per cent of the irrigated paddy fields could be improved by better use of irrigation, drainage, improved seed, fertilizer, and plant protection. This together with developing uncultivated land was expected to result, in the period 1953-1957, in an increase of 1,553,000 tons of rice and 794,000 tons of barley and wheat. In 1952 Japan imported 3.66 million tons of cereals.

³Eugene A. Wilkening, "A Sociopsychological Approach to the Study of the Acceptance of Innovations in Farming," *Rural Sociology*, XV (1950), 352. Veblen, Parsons, and others are cited as showing that "economic behavior cannot be fully understood apart from certain noneconomic considerations."

⁴Defined by Reuter as "the spread of units of culture, or culture traits" (E. B. Reuter, *Handbook of Sociology* [New York: Dryden Press, 1941], p. 108). New farming practices may be taken as culture traits.

⁵See North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *Bibliography of Research of Social Factors in the Adoption of Farm Practices* (Ames: Iowa State College, 1956).

⁶See Margaret Mead, *Cultural Practices and Technical Change* (New York: New American Library, 1955).

⁷Other approaches suggested by Wilkening are (1) as a problem of technological change as used by Ryan and Gross and (2) the sociopsychological approach which he used (*op. cit.*, p. 353).

to force anything on people against their will";⁸—the approach in the present study was made on the acceptance of innovations in farming and homemaking as a problem in adult education. Such is the new, postwar approach in most countries in East Asia outside the bamboo curtain;⁹ this is an area in which other methods—authority of landlord or head of the household, and "instruction" by policemen—were prevalent before World War II.¹⁰

The effort to test the acceptance or nonacceptance of practices was one of two purposes of the study sponsored by the Food and Agriculture Organization and the International Christian University Rural Welfare Research Institute, from which the data for this paper were taken.¹¹ The other purpose was to test the use of a newly published manual on survey methods issued by the Food and Agriculture Organization.¹² Japan was one of two countries in East Asia selected for this test. The present paper is based only on the data relating to acceptance or nonacceptance of farming and homemaking practices. Background data on the community selected for study included size of farm and area cropped, household and family characteristics, participation in organizations, schooling of family or household heads, expressed needs and help given by the extension service, and sources from which farmers and homemakers secured information on practices. The questionnaire on practices was designed to determine the effectiveness of extension teaching in the community. All farm families in one neighborhood of the village selected were visited, and the data were secured from both the farmer and the homemaker in every family.

The criteria for practices to be used in the test were two: (1) to be representative of the important improvements desired and (2) to be easily checked for adoption or nonadoption.¹³ The four farming prac-

⁸Kentaro Tokuyasu, *Extension Work in Japan* (Tokyo: Extension Division, Agricultural Improvement Bureau, Ministry of Agriculture and Forestry, Japanese Government, 1955).

⁹See *The Proceedings of the East Asian Rural Reconstruction Conference* (1500 Osawa, Mitaka, Tokyo: The Secretariat of the East Asian Rural Reconstruction Conference, 1955).

¹⁰Tokuyasu, *op. cit.*, p. 7.

¹¹David E. Lindstrom, "A Rural Life Study in Japan," MS submitted to the Food and Agriculture Organization in Rome, Aug., 1956, p. 12. K. Morioka, assistant professor of rural sociology, Tokyo Educational University, was field director for the project. The staff and graduate research assistants of the International Christian University Rural Welfare Research Institute, all Japanese, were used in making the interviews.

¹²H. P. Yang, *Fact Finding with Rural People* (Rome: Food and Agriculture Organization, August, 1955).

¹³These criteria were based on those used by Eugene A. Wilkening in "Acceptance of Improved Farm Practices" (North Carolina Agr. Expt. Sta. Tech. Bull. 98; Raleigh, May, 1952), p. 8. The procedure in selecting practices, based on these two criteria, was (1) to consult with officials of the Extension Division, Agricultural Improvement Bureau, Ministry of Agriculture and Forestry as to the general frame-

tices used in the test were (1) testing soil for fertilizer needs; (2) seeding recommended amounts of rice; (3) drying soil and planting two crops a year; and (4) using Norin No. 30 soybean seed. The four homemaking practices were (1) keeping a housekeeping account book; (2) supplementing rice with fat and protein; (3) making window in kitchen for light and air; and (4) having family discussions to plan work and the part for children.

The community selected for study—Seki-mura in Ibaraki prefecture—is one in which both agricultural and homemaking programs were good according to officials in the Extension Division of the Ministry of Agriculture and prefectoral extension officials.¹⁴ The neighborhood selected for sampling—Tatsunokuchi buraku-contained exactly 100 farm families; usable data were secured from 92 householders and 86 housewives, who were considered representative of the village.

ADOPTION AND TYPE OF PRACTICE

The adoption of practices must be preceded by the formation of favorable attitudes toward them. The forces which develop interest in, or favorable attitudes toward, a new practice may not be the same, however, as those which lead to adoption of these practices. Moreover, certain practices are more readily adopted than others. In some cases one finds good attitudes toward the practice; yet the people do not adopt it for one reason or another, such as, "It does not apply." One of the practices, for example, which can lead to a significant increase in food production in Japan is "Dry soil and grow two crops a year." Whereas 67 per cent favored the practice (because it was convenient and would increase yields, improve the soil, and provide good plants), only 12 per cent adopted the practice (see Table 1).¹⁵ Even on the 38 largest farms only 16 per cent had adopted the practice. This

work in which practices were recommended; (2) to check with prefectural leaders as to the types of practices generally recommended to farmers and homemakers in the area; (3) to secure from community leaders, assisted by the farm and home advisers serving the community, the specific list of practices being recommended to the farmers and homemakers in the area; and (4) to select from this list four farming and four homemaking practices which came most nearly to meeting the above mentioned two criteria. M. Watanabe, chief of the Research Department of the FAO Association, who six months before was assistant chief of the Economic Research Office of the Ministry of Agriculture and Forestry, Dr. K. Kamiya, professor of agricultural economics, Tokyo University, and Mrs. M. Yamamoto, chief, home life improvement section of the Ministry of Agriculture, virtually made the selection of the eight practices to be tested, selected from a list of 37 practices being recommended.

¹⁴These included T. Ogura, chief, Agricultural Economics Bureau, Mrs. Yamamoto, Mr. Watanabe, and the head of the Bureau of Extension, the head of the general affairs section, and the specialist in home improvement in the prefectoral government.

¹⁵Lindstrom, *op. cit.*, p. 111, Table 31. Note statistically significant difference on basis of size of farm only in relation to attitudes toward the practice.

Table 1. Percentages of 92 householders in Tatsunokuchi buraku, Seki-mura, Japan, who had favorable attitudes toward, tried, and adopted certain recommended practices, 1955, by size of farm

| Practice and use | All farms <i>N</i> = 92 | Under 5 tan* <i>N</i> = 17 | 5 to 10 tan <i>N</i> = 37 | Over 10 tan <i>N</i> = 38 | Chi square |
|---|----------------------------|-------------------------------|------------------------------|------------------------------|------------|
| <i>Testing soil for fertilizer needs</i> | | | | | |
| Attitude favorable | 96 | 77 | 100 | 100 | 19.58† |
| Tried practice | 82 | 53 | 84 | 92 | 12.42† |
| Adopted practice | 73 | 29 | 84 | 82 | 20.06† |
| <i>Seed recommended amounts of rice per tsubo</i> | | | | | |
| Attitude favorable | 84 | 77 | 92 | 79 | 3.22‡ |
| Tried practice | 78 | 65 | 81 | 82 | 2.21‡ |
| Adopted practice | 66 | 65 | 70 | 63 | 0.53‡ |
| <i>Dry soil and plant two crops a year</i> | | | | | |
| Attitude favorable | 67 | 47 | 63 | 82 | 7.23§ |
| Tried practice | 21 | 24 | 14 | 26 | 1.91‡ |
| Adopted practice | 12 | 12 | 8 | 16 | 0.99‡ |
| <i>Use Norin No. 30 soybean seed</i> | | | | | |
| Attitude favorable | 57 | 65 | 46 | 63 | 5.99§ |
| Tried practice | 38 | 35 | 27 | 50 | 4.61‡ |
| Adopted practice | 33 | 35 | 27 | 37 | 0.71‡ |

Source: All tables are based on the author's MS entitled "A Rural Life Study in Japan," submitted to the FAO, in Rome, Italy, in Aug., 1956.

*One tan is equal to .1 cho or 0.245 acres.

†Not significant.

‡Significant at the .01 level.

§Significant at the .05 level.

practice, unlike testing soil, seeding recommended amounts of rice, or using an improved variety of soybeans, all of which called for change in techniques or operation only,¹⁶ did require some basic change in operation and in the farm enterprise.

¹⁶North Central Regional Rural Sociology Subcommittee on the Diffusion of New Ideas and Farm Practices, *How Farm People Accept New Ideas*, North Central Regional Pub. No. 1 (Spec. Rep. 15; Iowa Agr. Ext. Serv., Ames, 1955), p. 6. Here

The same difference could be seen regarding homemaking practices: 85 per cent of the women favored making a window in the kitchen for light and air, but only 38 per cent had adopted the practice. Here change was involved not only in the amount of capital or physical

Table 2. Percentages of homemakers in 92 households in Tatsunokuchi buraku, Seki-mura, Japan, who had favorable attitudes toward, tried, and adopted certain homemaking practices, 1955, by size of farm

| Practice and use | All farms <i>N</i> = 92 | Under 5 tan* <i>N</i> = 17 | 5 to 10 tan <i>N</i> = 37 | Over 10 tan <i>N</i> = 38 | Chi square |
|--|----------------------------|-------------------------------|------------------------------|------------------------------|------------|
| <i>Keep a housekeeping account book</i> | | | | | |
| Attitudes favorable | 82 | 71 | 73 | 95 | 7.51† |
| Tried practice | 41 | 35 | 38 | 47 | 1.01‡ |
| Adopted practice | 33 | 24 | 35 | 34 | .75‡ |
| <i>Supplement rice with fat and protein</i> | | | | | |
| Attitude favorable | 87 | 94 | 81 | 88 | 2.14‡ |
| Tried practice | 78 | 82 | 68 | 87 | 4.61‡ |
| Adopted practice | 71 | 71 | 62 | 79 | 2.41‡ |
| <i>Made window in kitchen for light and air</i> | | | | | |
| Attitude favorable | 85 | 82 | 81 | 90 | 1.14‡ |
| Tried practice | 41 | 24 | 35 | 55 | 4.61‡ |
| Adopted practice | 38 | 8 | 35 | 50 | 5.56§ |
| <i>Have family Discussion to plan work and part for children</i> | | | | | |
| Attitude favorable | 78 | 59 | 76 | 90 | 6.63§ |
| Tried practice | 65 | 12 | 65 | 76 | 6.41§ |
| Adopted practice | 66 | 13 | 65 | 76 | 4.61‡ |

Source: See Table 1.

*One tan equals .1 cho or .245 acres.

†Significant at the .01 level.

‡Not significant.

§Significant at the .05 level.

again statistically significant differences on basis of size of farm related only to attitudes.

materials required, but also in family co-operation. To supplement rice with fat and protein, however, required only a change in material and human effort. Hence it is not surprising that, whereas 87 per cent of the homemakers were favorable, 71 per cent had adopted the practice (see Table 2).¹⁷

SOURCES OF INFORMATION

The sources of stimulation to accept new practices are readily available in the Japanese rural community, and most of the farmers and homemakers usually make use of them (see Table 3).¹⁸ All the farmers had heard of the co-operatives, 96 per cent of meetings on extension, and 92 per cent knew the advisers of the Extension Service. But whereas 76 per cent always used co-operatives, only 54 per cent always

Table 3. Sources of agricultural and homemaking information listed by 91 householders and 72 homemakers in Tatsunokuchi buraku, Seki-mura, Japan, 1955, in percentage of total responding

| Source | Percent householders | | | Percent homemakers | | |
|---------------------------------------|----------------------|---------------|-----------------------|--------------------|---------------|-----------------------|
| | Aware | Always use | Some- times use | Aware | Always use | Some- times use |
| <i>Community formal organizations</i> | | | | | | |
| Co-operative | 100 | 76 | 15 | 81 | 33 | 19 |
| Local meetings* | 96 | 54 | 18 | 82 | 42 | 24 |
| Agriculture school | 62 | 9 | 4 | 56 | 4 | 17 |
| <i>Community informal</i> | | | | | | |
| Neighbors | 95 | 45 | 34 | 82 | 44 | 15 |
| Relatives | 90 | 32 | 31 | 82 | 35 | 13 |
| Merchants | 56 | 9 | 8 | 53 | 6 | 8 |
| <i>Outside institutional</i> | | | | | | |
| Advisers | 92 | 42 | 26 | 89 | 43 | 15 |
| Method demonstration | 82 | 21 | 31 | 75 | 28 | 19 |
| Result demonstration | 80 | 29 | 18 | 72 | 26 | 10 |
| Specialists | 91 | 28 | 22 | 81 | 28 | 13 |

Source: See Table 1.

*Includes those of the Women's Association.

¹⁷Lindstrom, *op. cit.*, p. 121, Table 37.

¹⁸Ibid., Figures 8 and 9.

used meetings and only 42 per cent the advisory service. (If the percentage of those who sometimes used these services were added, the figures would be 91, 72, and 68 per cent, respectively.) Among homemakers 89 per cent were aware of the advisers and 82 per cent of meetings (in this case of the women's association); but only 43 per cent always used the advisory service and 42 per cent the women's association (58 per cent and 66 per cent, respectively, always or sometimes used these services). A high percentage reported that neighbors also knew about these sources. Hence, it may be said that the availability of sources of information on improved agricultural and homemaking practices was common knowledge in the neighborhood.

When it came to mass media, there was also common knowledge about the radio, newspapers, and about pamphlets from the Extension Service. The percentage of use was not as high as for co-operatives, meetings, and advisers (see Table 4),¹⁹ but mass media were nevertheless important. (A loud speaker system is used in the village to supplement radio and other extension information media; this "vocal bulletin board" was reported by field workers to be quite an effective medium of mass communication.)

Table 4. Percentage of 91 householders and 72 homemakers listing and using mass media and institutional publication sources for agricultural and homemaking information in Tatsunokuchi buraku, Seki-mura, Japan, 1955

| Source of information | Aware of it | Always use it | Sometimes use it |
|-------------------------|-------------|---------------|------------------|
| <i>Agricultural</i> | | | |
| Radio | 92 | 48 | 23 |
| Newspapers | 91 | 42 | 23 |
| Pamphlets | 84 | 26 | 21 |
| Pictures | 84 | 19 | 23 |
| Exhibits | 84 | 30 | 22 |
| <i>Home improvement</i> | | | |
| Radio | 83 | 54 | 11 |
| Newspapers | 82 | 38 | 21 |
| Pamphlets | 69 | 26 | 13 |
| Pictures | 72 | 19 | 21 |
| Exhibits | 75 | 22 | 15 |

Source: See Table 1.

¹⁹*Ibid.*, Figure 10.

INFLUENCES RESULTING IN CHANGE

The influences resulting in change—trying and adopting practices—usually were local, i.e., observation of good results on other farms and the urging of advisers and neighbors. The advisers were considered the best sources of information leading to adoption (see Table 5)²⁰ because they were known to have reliable knowledge, had proved themselves to be trustworthy and reliable, and had the ability to teach or demonstrate new practices.²¹ For householders the farm adviser ranked well above others as the chief source of information.

For the homemakers, the women's association outranked the home adviser as the chief source of stimulation to try out and adopt new prac-

Table 5. Percentage of householders and homemakers in 92 families in Tatsunokuchi buraku, Seki-mura, Japan, giving the source listed as the best source of information on agricultural and homemaking practices, 1955

| Source | Agricultural practice | | | | Homemaking practice | | | |
|-------------------------------|-----------------------|----|----|----|---------------------|----|----|----|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Farm adviser | 73 | 25 | 58 | 33 | — | — | — | — |
| Home adviser | — | — | — | — | 17 | 32 | 20 | 5 |
| Women's association | — | 1 | — | — | 23 | 35 | 21 | 20 |
| Co-operative | 9 | 4 | 4 | 5 | — | — | — | 3 |
| Group meeting | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 7 |
| Neighbors | 2 | 2 | 8 | 4 | 2 | 2 | 4 | 1 |
| Radio | 1 | — | — | — | — | — | — | — |
| Pamphlets | — | — | — | 1 | — | 1 | 1 | — |
| Specialist | 1 | 8 | 2 | 4 | — | — | 1 | — |
| Newspaper | — | 1 | 1 | — | 1 | — | 1 | — |
| Experienced person | — | — | 3 | 2 | 4 | — | 4 | 3 |
| Short course | — | — | 1 | — | — | 5 | 1 | — |
| Public hall | — | — | — | — | — | 2 | 2 | — |
| Village office | 1 | 1 | — | — | — | — | — | 3 |
| Doctor | — | — | — | — | — | 1 | 1 | — |
| School | — | — | 3 | — | — | 3 | — | 8 |

Source: See Table I.

²⁰*Ibid.*, p. 119, Table 35, and p. 131, Table 43.

²¹Both the farm adviser and the home adviser had lived in the community for some time and had developed close personal relations with the farm families in the neighborhood.

tices, especially the three practices: adding protein and fat to the diet, keeping home account books, and putting a window in the kitchen. The chief stimulation for trial of the fourth practice, having family discussions, came from the women's own observation, the women's association, and the adviser, ranking in that order. The reasons given were that family discussions make life easier for the housewife, are good training for children, and secure family co-operation. It may be deduced that "own observation" meant observation as to how the practice worked with neighbors or in one's own family when it was tried.

REASONS FOR ADOPTION AND FOR BEST SOURCES

Reasons for adoption related generally to the good results obtained. For testing soil reasons included "good results," "increased production," "urging of the farm adviser," and "necessity for doing so." Similar reasons were given for the other practices. Homemakers gave as reasons for using home accounts "saving money," "balancing the income with outgo," and "having proof of payment"; for adding fat and protein to the diet reasons were that it was "good for the health" and "provided tasty meals"; for putting windows in the kitchen a reason was that "it made a brighter and a more sanitary kitchen." In general, these doubtless reflected the teaching of the adviser, but it is significant that they became the women's own reasons.

Sources of information are regarded as best when they are found to be reliable. Whereas the farm adviser was considered the best single source of information on agricultural practices, the women's association and the home adviser together were mentioned most frequently as the best sources of information on each of the four homemaking practices (see Table 5). The women of the community look upon these and other group means (for the home adviser works primarily through groups)²² as best sources more than any other types of sources for information on all practices.

The reasons for rating a source as best as given by the householders—in this case the farm adviser—relate to four important qualities: possession of reliable knowledge, trustworthiness, reliability, and ability to test or demonstrate uses of new practices. An adviser must also be friendly, be willing to make frequent visits, and be available to the farmer when he wants help. The training of farm advisers should include not only technical knowledge but also methods of gaining the confidence of people.

Reasons given as to why the home adviser was the best source was that she "has knowledge, teaches and guides well and is experienced."

²²It is the policy of extension work in home life improvement to work through local groups as much as possible. This was stated by both the national and the prefectural leaders of extension.

that she is "trustworthy, develops confidence in one's own ability and is earnest and active," and also that she "takes good care of us—with her we can do as we like—she is intimate and close to the family." Hence there is evidenced need not only for technical training; of equal importance is training to get close to and the ability to work with people, and to develop good social relations with them.

Group meetings were looked upon as a good source if they are held regularly, if there is good attendance, and if there is good discussion so as to hear others' points of view.

SIZE OF FARM AND ADOPTION OF PRACTICES

The influence of class differences on acceptance or nonacceptance of practices was apparent, especially with respect to agricultural practices, but the differences were not as great as might be expected. Farmers operating over 2.45 acres adopted new practices most frequently (except for seeding recommended amounts of rice, for which size of farm made little difference in percentage of adoption).²³ The number of farmers on less than 1.2 acres fell below that of farmers on 2.45 acres or more, especially in regard to testing soil for fertilizer needs and for drying soil and planting two crops a year. One would require money outlay and the other change in operations. Testing soil would involve new operations, which a farmer on a small farm would be reluctant to do.

The percentage of ownership of farms by the cultivator is high in the community; only 5 per cent are tenants, and 53 per cent rent land to farm in addition to that which they own. The highest percentage of tenancy is among the farmers on small acreages, and these farmers spend the most time in nonfarm occupations.²⁴ Hence, it is not surprising that expressions of need for help came from intermediate and larger-scale farmers (larger-scale farmers, for the purpose of this study, are those cultivating 2.5 acres or more). For example, in the category of "no answers" regarding needs to improve production, the percentages were 41, 16, and 8, respectively, for the "petty," intermediate, and larger-scale farmers. It is evident that thinking and practice about production and marketing improvements are done mostly by those in the more fortunate circumstances; yet the needs are as great, if living levels are to be raised, among the lower socioeconomic classes who are more inarticulate.

²³Note that the only statistically significant differences based on the size of farm are with respect to testing soil (on attitude toward, trying, and adoption) and attitudes toward the practice of drying soil and toward use of Norin No. 30 soybean seed.

²⁴For farmers on 0.7 acres or under in Seki-mura 42.4 per cent of the land cultivated is rented, whereas for those on farms of 2.45 acres or more 90 per cent of the land cultivated is owned. Ninety per cent of those whose main occupation was not in farming were on farms of less than 1.2 acres; 84 per cent of the full-time farmers lived on farms of 1.2 acres or more (Lindstrom, *op. cit.*, pp. 43, 44).

The differences by economic class in adopting new homemaking practices, are not as great as in adopting new farming practices. The chief difference (see Table 2) was in the number of homemakers who added windows in the kitchen. In this case economic limitations apply.²⁵ It is interesting to note, however, that the percentages of homemakers trying the practice of having discussions to plan work and the part children should have increased with increase in size of farm.²⁶ This would imply that farm women on the larger farms have found greater freedom of expression than those on smaller farms. This difference was reflected even in the attitudes toward this practice. Only small differences with respect to size of farm showed having good attitudes toward putting windows in the kitchen or toward adding fat and protein to the diet. Differences in proportions of adoptions of adding fat and protein to the diet were small also. But when it came to adopting the practice of putting a window in the kitchen, only 8 per cent of the "petty" farm homes, 35 per cent of the intermediate, and 50 per cent of the larger-scale farm homes adopted the practice.²⁷ Proportions did increase somewhat also both for good attitudes and trial of the practice of keeping account books.

SUMMARY

It is apparent from this study that mass media are important conditioning influences; through them almost all farm households in the community were made aware of the new practices. But, as indicated in Table 5, the influences leading to adoption were the urging of those in whom the people had confidence—advisers, friends, or relatives—in meetings and through neighborhood visits, and, as was shown in the reasons for the adoption of new practices, through their own observation of and experience with the good results obtained, the increase in production, the money saved, the convenience, and the improvement in living conditions. Conversely, failure to adopt the practices seemed to be the result of personal observation, experience, and habit. Such reasons as the following were given: was satisfied with present practice; found new practice unnecessary or inconvenient; was too busy to try it; results did not seem good; practice does not apply, is too expensive, or too troublesome; it is not the custom; husband objects; and "decision not mine." Here can be seen evidences of the influence of the social environment: what people in the community generally think and do, what the situation is within the family, and what success

²⁵Note that the only statistically significant differences based on size of farm are with respect to (1) attitudes toward keeping an account book, (2) adoption of practice of putting window in kitchen, and (3) favorable attitude toward and trial of the practice of having family discussions.

²⁶*Ibid.*

²⁷*Ibid.*

people have with new practices not only in increasing production but in easing the burden of work and providing better living conditions. These factors are all interrelated, and all must be considered in carrying out a democratically oriented adult education program.

IMPLICATIONS

In a culture like that of rural Japan, in which the social system has been authoritarian for so long, it is significant that one can find a community in which there is so high an incidence of acceptance of new practices—73 per cent on testing soil for fertilizer needs and 71 per cent for supplementing rice with fat and protein. One basic reason for this may be that these people under an authoritarian regime have become accustomed to doing what the government representative tells them to do (farm advisers and home advisers are recognized as government agents). The evidence from the case analysis in the community would not fully support this conclusion.²⁸ Although in governmental administration the line flows from the village mayor to the buraku head and through him to the people, yet in the village it was reported that the system of social control is exercised on the basis of principles of equality by elected leaders.

It is noteworthy, too, that some governmental officials realize that, when farmers and homemakers accept new practices on the basis of their own judgment as to value and applicability, the results will be greater in terms of increased production and better living.

The implications of this study for technical aid programs seem to be quite clear. If the extension system in a country to which technical aid is to be extended has a stated policy "not to force people to do anything against their will," then it must be recognized that adoption of new practices can come only if the people involved understand their importance, see them work out successfully in practice, and find in them distinct advantages over the old practices. This means that, although the conditioning influences can come through mass media, yet the influences leading to adoption must come from trusted and reliable agents in the community, who can find and convince those of influence among the people to try out and use the new practice. Technological training is important, but it is not enough; agents must have training as well in how to analyze local social situations and how to work with the people and the groups of which they are a part.

²⁸*Ibid.*, p. 86.

EUGENE A. WILKENING

Consensus in Role Definition of County Extension Agents between the Agents and Local Sponsoring Committee Members*

This paper compares the perceptions of county agricultural committee members with those of county extension agents as to general objectives and specific roles of county extension workers in thirty Wisconsin counties. County committee members tend to view the agents more as "generalists" and as persons performing services for groups and associations in the county than do the agents themselves. The ordering of types of activities on the basis of importance in "getting the job done" by committee members tends to agree more with the ordering by agricultural agents than by home agents or 4-H Club agents. County agricultural committee members tend to define the roles of county extension workers in terms of local needs and interests rather than in terms of sectional, state, or national problems. There is general consensus between agents and committee members with respect to their relationships in program planning but not in administrative matters.

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THE Extension Service is a complex organization which includes an administrative organization, trained professionals, a local sponsoring body, and a network of formal and informal relationships at local, state, and national levels. The functioning of this organization can be studied from many points of view. Many studies have been made of

*This paper is based upon data from a study of the roles of county extension agents, supported by the Cooperative Extension Service in Agriculture and Home Economics, the Wisconsin Agricultural Experiment Station, and the Research Committee of the Graduate School of the University of Wisconsin. See also, *The County Extension Agent in Wisconsin: Perceptions of Role Definitions as Viewed by the*

the techniques used by the professionals in effecting changes in behavior. Few studies have been concerned with the more general problems of role definition of the professional worker, relationships between the administrators and the professionals, and relationships with local sponsoring bodies and with the clientele.¹ The studies of participation in extension activities have in general limited themselves to contacts with extension and have not been concerned with other forms of interaction and influence.²

This paper presents part of a larger study which focuses upon the role definition of the professional worker at the county level. One problem pertains to the way in which county agricultural committeemen (the local sponsoring body) view the role of county extension workers and how their views vary according to certain characteristics of the counties and of the committeemen. The main objective is to compare the role definition as viewed by the committeemen with that of the agents themselves. This problem is similar to those attacked in the study of the relationship of school board members to school superintendents in Massachusetts.³

The problem then is essentially one of role consensus, that is, the extent of agreement with respect to the content of agent behavior among persons occupying two different positions within the Extension Service system.⁴ Effective relationships between people require that there be some agreement or consensus with respect to objectives of the system and how these objectives are attained. Because of its

Agents (Wisconsin Agr. Expt. Sta. Res. Bull. 203: Madison, 1957); and Lawrence Biever, "Roles of County Extension Agents as Perceived by County Agricultural Committee Members in Wisconsin" (Ph.D. dissertation in Cooperative Extension [Education], University of Wisconsin, 1957).

¹See, James F. Davis, "Conceptions of Official Leaders' Roles in the Air Force," *Social Forces*, XXXII (1954), 253-258; Scott Greer, "Situational Pressures and Functional Role of the Labor Leader," *Social Forces*, XXXII (1953), 41-45; Melvin Seeman, "Role Conflict and Ambivalence in Leadership," *American Sociological Review*, XVIII (1953), 371-380; J. W. Getzels and E. G. Guba, "Role, Role Conflict, and Effectiveness: An Empirical Study," *American Sociological Review*, XIX (1954), 164-175; and Neal Gross and Ward S. Mason, "Some Methodological Problems of Eight-Hour Interviews," *American Journal of Sociology*, LIX (1953), 197-204.

²See, A. Lee Coleman, "Differential Contact with Extension Work in a New York Rural Community," *Rural Sociology*, XVI (1951), 207-216; C. R. Hoffer, *Selected Factors Affecting Participation of Farmers in Agricultural Extension Work* (Michigan Agr. Expt. Sta. Spec. Bull. 331; East Lansing, June, 1944); Herbert F. Lionberger, *Information Seeking Habits of and Characteristics of Farm Operators* (Missouri Agr. Expt. Sta. Res. Bull. 581; Columbia, April, 1955); Edward O. Moe, *New York Farmers' Opinions on Agricultural Programs* (Cornell Ext. Bull. 864; Ithaca, Nov., 1952).

³Harvard School Executive Studies conducted by Neal Gross and others, Cambridge, Massachusetts.

⁴Two aspects of role concensus are the extent of agreement with respect to a particular role (a) of persons occupying corresponding positions, and (b) of persons occupying different positions. This study is concerned primarily with the latter type.

strategic position in the system, the degree of consensus between local committeemen and the agents is of crucial concern for an effective extension program. If the local sponsoring committee is to give the extension program sanction and support, it is important that they see the objectives, roles, and procedures as the agents see them. The committee is in a position to assist the agents in developing a greater sense of satisfaction and accomplishment by helping to eliminate some of the extraneous and conflicting expectations of the agents in their work.

The data are obtained from interviews with the agricultural committeemen and with the agricultural agent, home agent, and 4-H Club agent in thirty counties in Wisconsin. The counties include all those having each of the three types of agents who had been in the county at least one year at the time of the study. Personal interviews were conducted with the agents and with the committee members in 1955.

The county agricultural committee is designated by state statutes as the body responsible for approval of the program and personnel of co-operative extension work in agriculture and home economics. They recommend a budget to the county board, of which at least three and usually four of the committeemen are members. A fifth committee member, not included in the study, is the county superintendent of schools. A total of 112 committee members, almost four per county, were interviewed. The counties from which they were selected do not represent the state since none are included from the northern heavily wooded areas, although almost all of the southeastern, more urbanized counties are included.

GENERAL VIEWS OF EXTENSION WORK

Agricultural committee members were asked to define the objectives of the work of the agricultural agent, the home agent, and the 4-H Club agent. For the most part their replies were too general for precise classification, hence, are not listed here. However, they do reveal something about their perceptions of extension work. One observation is that agricultural agents are viewed as assisting with specific types of subject matter by most committee members; whereas 4-H Club agents are expected to develop "an appreciation of farm life" in order to influence boys and girls to remain on the farm. Agricultural agents are more frequently viewed as an advisor or consultant to groups in the county than are the other two agents.

Responses to the free-answer questions also indicate that the county committee members see extension workers as serving the people in the county. Very few voluntarily indicate that a major objective of their work is accomplishing sectional, state, or national objectives, although some saw the county agricultural agent in the role of co-ordinator of agencies in the county. It may be concluded that the county agri-

cultural committee tends to reinforce the local orientation of extension work. Although paying for one-third or less of its cost of extension work, the committee sees the agents in the county primarily as serving the needs of persons and groups in the county and not as attacking problems that require the concentrated effort of rural people in many counties. For example, few committee members rated such problems as public policy, consumer education, and marketing as areas that should receive high emphasis in extension programs.

County committeemen also see county extension workers as "generalists" rather than as "specialists." This is in contrast to the views of the agents who see themselves as a combination of a generalist and a specialist. According to Table 1 twice as many committee members checked the "generalist" category as did the agents; 4-H Club agents, more than others, checked the highest "specialist" category. This points up a major divergence in the perceptions of agents and of local committeemen as to the kind of person the agent is. The committeemen reflecting local sentiment look to agents for the answer to questions in many areas. One might question, however, whether they accurately reflect the views of the specialized farmers of their counties. On the other hand, most agents feel the need of having a

Table 1. Distribution of agricultural, home and 4-H Club agents and of county agricultural committeemen according to whether agents should have "general" or "special" interest in subject-matter areas

| Degree of specialization | Agr. agents | Home agents | 4-H Club agents | County agr. com- mitteemen |
|---|-------------|-------------|-----------------|----------------------------|
| General interest in all areas of subject matter affecting farm people | 12 | 12 | 10 | 93 |
| General interest in all areas with special interest in one or two | 15 | 15 | 13 | 12 |
| Major interest in one or two and some interest in other areas | 1 | 1 | 5 | 5 |
| Total | 28 | 28 | 28 | 110 |

special interest or two. This probably reflects the nature of their training and the nature of their opportunities for advancement, but may also arise from their personal need to feel that they are authorities in at least one area, since it is impossible to be highly competent in many.

THE MAJOR FUNCTIONS OF EXTENSION

Agreement upon major goals or functions between the local sponsoring committee and the agents is important if the committee is to support and help promote extension work in the county. Four major functions of extension work were arrived at as the goals or content of extension work. These "functions" are distinguished from the "types of activities" of extension workers discussed later, which includes the means as well as the ends of extension work. The ranking of the four major functions according to their "importance" provides another basis for determining consensus between agents and committee members. The percentage ranking of these functions is shown in Figure 1.

First, one might observe the wide variation among the three agent groups in their ranking of these functions. Although they were to rank them as "functions for the Extension Service," no doubt their rankings

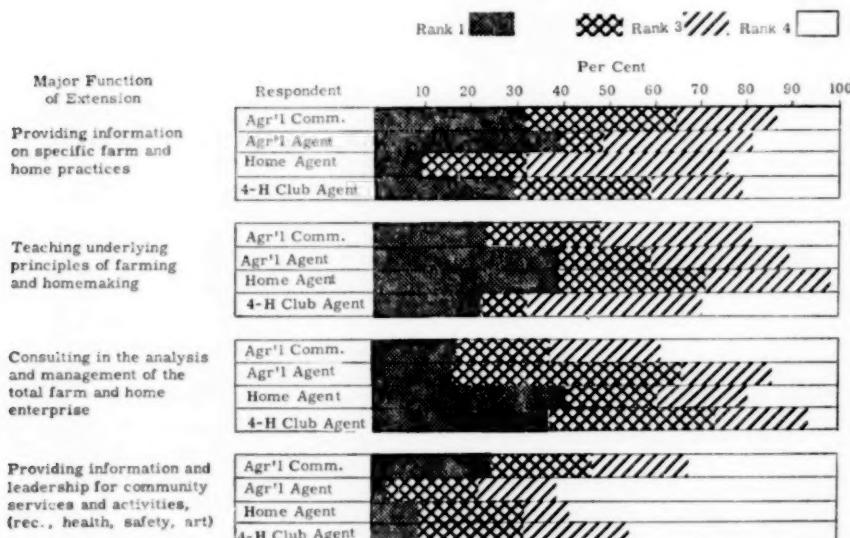


Figure 1. Percentage of county agricultural committeemen and agricultural, home, and 4-H Club agents ranking four major functions of the Extension Service according to importance

reflect the emphasis in their own phases of extension work. Agricultural agents tend to rank the promotion of practice information and the teaching of principles highest, whereas home agents rank the management consulting and the teaching of principles highest, and 4-H Club agents the management consulting function highest.

The county agricultural committee members follow a different pattern from any of the agents in their ranking of the four major functions. Although they agree with the agricultural and 4-H Club agents that providing practice information should receive high emphasis, they feel that providing information and leadership for community services and activities should receive as much as or more emphasis than either of the other two. The management consulting function was ranked lower by committee members than any other.

This comparison of the rankings of major functions suggests local people still regard involvement in community affairs and activities of a service, social, or recreational nature as an important function of extension workers, although the agents do not. Secondly, few committee members feel that "consulting in the analysis and management of the total farm and home enterprise" should receive most emphasis. In this respect they compare with the views of the agricultural agents except that a high proportion of the latter ranked this function as "second."

TYPES OF ACTIVITIES OF EXTENSION AGENTS

The work of the county extension agent is difficult to classify because of the many kinds of things he does within a day's time. Although he may be viewed as a teacher, consultant, or organizer, much of his time is taken up with activities that do not fit into these roles. After talking with agents, administrators, and specialists, nine types of activities were found as classifications for most of the work of the agents. These nine types may be thought of as the roles or subroles the agents perform. They reflect not only the content of the agent's activity but also the types of persons or groups with whom he works.

County committee members as well as agents were asked to rank each of the nine types of activities on the basis of "importance in getting the job done." They were also instructed to exclude any activities they felt were not part of their work. The agents' failure to rank certain activities was due primarily to revisions of the items after the agents in the first six counties were interviewed. About 5 per cent of the committee members also failed to rank the items. For the most part, however, the activities represented meaningful categories to agents as well as to committee members.

In general, the committee members were more consistent in ranking the three agent groups than the agents themselves. This likely indicates a kind of generalizing on the part of committee members

resulting in similar rankings of the activities for all three agents. The main discrepancy in committee rankings for the three agents is in placing "teacher training" and "organizing and coordinating clubs" higher, and "program planning" lower, for home agents and 4-H Club agents.

Figure 2 provides a comparison of the ranking of the nine types of activities for agricultural agents by committee members and by the agents. They agree that "providing information directly" should receive primary emphasis, that "acting as secretary and providing other services for associations, fairs, etc.," should receive least emphasis, and that "program planning" should rank as second or third in importance. For the other items there are wide discrepancies between agent and committee member rankings. The committee members rank "coordinat-

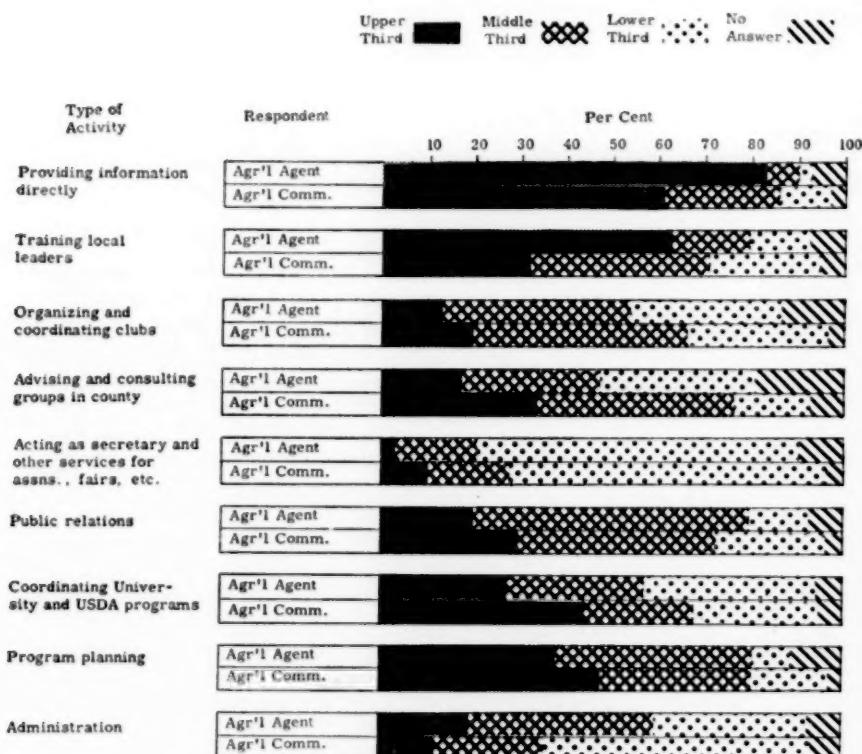


Figure 2. Percentage of agricultural agents and county agricultural committee members ranking nine types of activities on the basis of importance

ing University and U.S.D.A. programs" and "advising and consulting groups in the county" much higher than do the agents. Conversely, they rank "training local leaders" and "administration" much lower.

Apparently, local persons see the agent as a co-ordinator of agencies and an advisor to groups, which are action roles, while agents regard the educator, leader training, and administrator roles as relatively more important. This is an indication perhaps that committee members perceive agents' work in terms of its more public aspects, whereas the agents place greater emphasis upon the "internal" aspects of their work, i.e., program planning, leader training, administration, and the like.

Surprisingly, there is general agreement in the ordering of the activities of home agents between committee members and the agents.

Upper Third Middle Third Lower Third No Answer

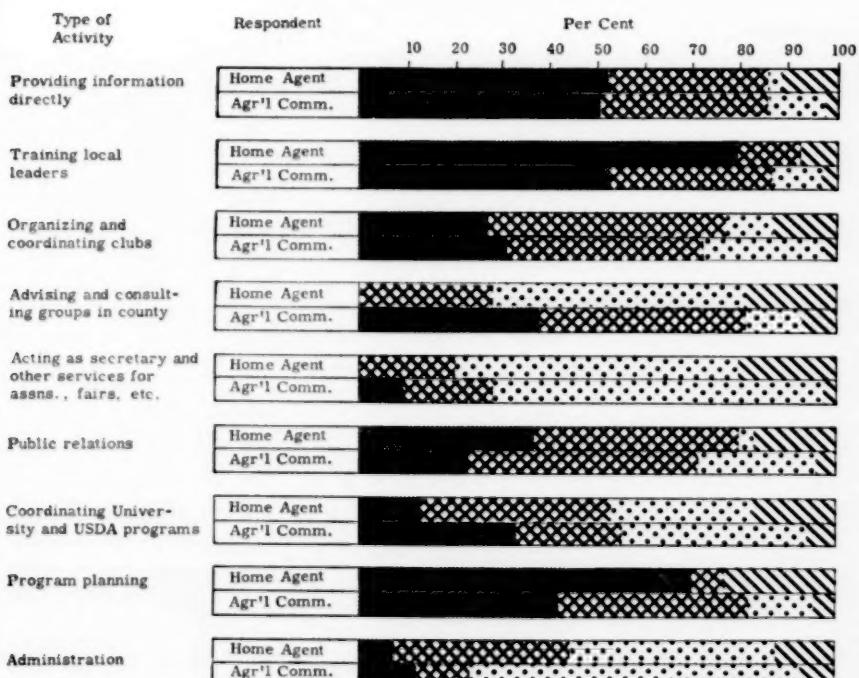


Figure 3. Percentage of home agents and county agricultural committee members ranking nine types of activities on the basis of importance

Home agents do rank "training local leaders," "program planning," and "public relations" somewhat higher than do the committeemen. On the other hand, the committeemen rank "advising and consulting with groups in the county" much higher and the service type of activity somewhat higher than they do for the other two agents.

There is considerable divergence between the ranking of the nine types of activities for 4-H Club agents by county committeemen and by the agents. The committeemen rank "training local teachers," "organizing and coordinating clubs," and "providing information directly" among the top three activities; 4-H Club agents include "program planning" rather than direct teaching among the top three. Also, committee members rank "advising and consulting with groups in the county" and "coordinating University and U.S.D.A. programs" higher than do the 4-H Club agents.

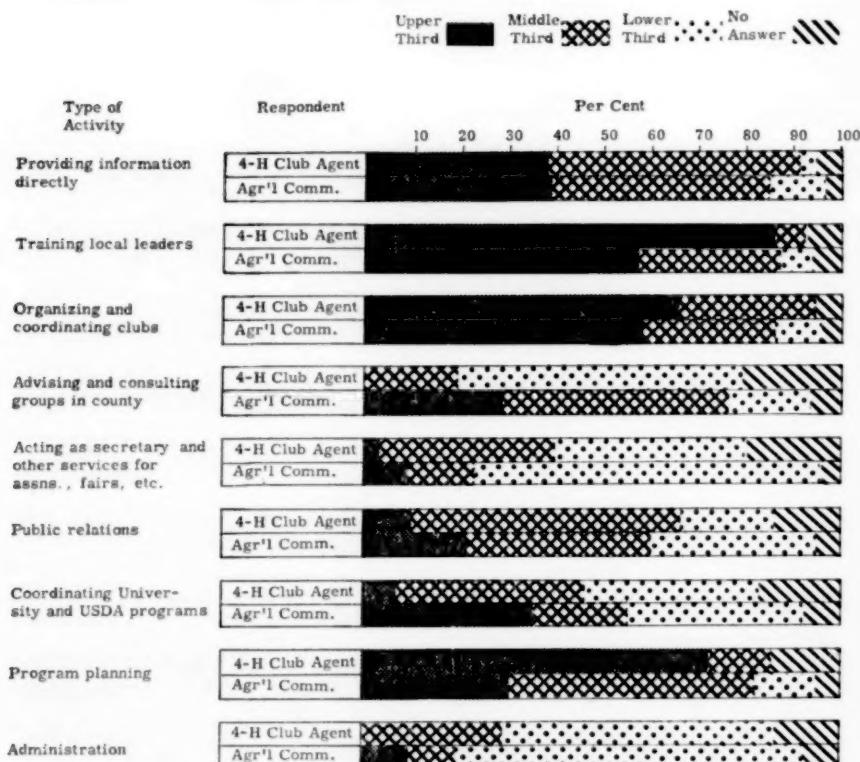


Figure 4. Percentage of 4-H Club agents and county agricultural committee members ranking nine types of activities on the basis of importance

A related problem of consensus is the amount of agreement in role definition between agents and agricultural committee members within the same county. This could in turn be associated with the extent to which there are indications of strain or lack of support of the extension program by the local committee. Although explorations were made in this direction, the results are only suggestive. There is indication, for example, that greater agreement exists between agricultural agents and committee members than between home agents or 4-H Club agents and committee members within the same county, indicating a higher degree of interaction between agricultural agents and the committee than between the other two agents and the committee.

AGENT-COMMITTEE RELATIONSHIPS

Effective functioning within a system also requires consensus in the ordering of relationships among the persons involved. The amount of agreement between agents and agricultural committee members with respect to the responsibilities of each in program planning, in program execution, in budget preparation, and in personnel matters provides another measure of consensus. Lack of consensus in these matters may indicate either a lack of clarification as to responsibilities and relationships or disagreement with established policies and procedures. Certain questions asked of both agents and committee members provide a basis for arriving at the degree of consensus with respect to relationships between agents and county agricultural committee members. The questions were asked to elicit responses as to the "most desirable" type of relationship as they perceived it.

Table 2 compares the responses of agents and local committeemen with respect to the timing of the committee's involvement in program planning. There is no difference between the two sets of responses when all agents are considered together. However, more agricultural agents feel that the committee should be involved "after the program is planned" than do committee members. This suggests that county agricultural agents tend to view the agricultural committee more in the role of an approving body than do other agents or committee members themselves.

Agents and committee members also tend to agree in their conception of the role of a county program-planning committee. A change in wording of the third alternative probably accounts for some of the difference in the distribution of responses. About one in nine of the committee members indicated that a separate committee "is not necessary in program planning," and, although none of the agents checked a comparable alternative, comments from agricultural agents indicate that some do not see the county planning committee as playing an important role in program planning. It is worth noting that there is much greater variation among the three types of agents with respect

Table 2. Responses of county extension agents and of county agricultural committee members with respect to when the committee should be brought into program planning

| County agr. committee should first be brought into program planning | Type of agent | | | All agents | | County agr. committee | |
|---|---------------|------|-----|------------|-------|--------------------------|-------|
| | Agr. | Home | 4-H | No. | % | No. | % |
| | No. | No. | No. | No. | % | No. | % |
| Before program is planned | 16 | 24 | 21 | 61 | 67.8 | 73 | 65.2 |
| During planning of pro- gram but not before | 8 | 4 | 7 | 19 | 21.1 | 25 | 22.3 |
| After program is planned only | 6 | 1 | 2 | 9 | 10.0 | 13 | 11.6 |
| No answer | | | | 1 | 1.1 | 1 | 0.9 |
| Total | 30 | 30 | 30 | 90 | 100.0 | 112 | 100.0 |

to the role of the program-planning committee than between agents and the committee members.

With respect to preparation of the county extension budget, the county committee members are about equally divided between those who feel that the committee should "take initiative or give specific suggestions or information in its preparation" and those who feel the committee should "give approval or disapproval after it is prepared" by the extension staff. This suggests a lack of consensus among committee members as to their role in budget preparation. On the other hand, most agricultural agents feel that the committee should take initiative in its preparation (see Table 4). Perhaps this is an indication of deference shown to the local sponsoring body, yet, it suggests that there is a lack of understanding between the committee and agents as to the role of each in budget preparation. This no doubt reflects the peculiar nature of the organization and support of extension, in which aid comes from three levels of government—local, state, and national.

With respect to the hiring of office personnel, the members of local sponsoring committees tend to regard themselves as an approving body, with only a few indicating that they should "not be concerned" or

Table 3. Responses of county extension agents and of county agricultural committee members with respect to the role of the county planning committee

| In selecting problems for the extension pro- gram a county plan- ning committee | Type of agent | | | All agents | | County agr. committee | |
|---|---------------|------|-----|------------|-------|--------------------------|-------|
| | Agr. | Home | 4-H | No. | % | No. | % |
| | No. | No. | No. | No. | % | No. | % |
| Should help select specific problems | 14 | 9 | 15 | 38 | 42.2 | 45 | 40.2 |
| Should provide ideas on general problem areas | 16 | 20 | 15 | 21 | 56.7 | 52 | 46.4 |
| Is not a part of program planning (is not neces- sary in program planning—agr. com.) | | | | | | 13 | 11.6 |
| No answer | | 1 | | 1 | 1.1 | 2 | 1.8 |
| Total | 30 | 30 | 30 | 90 | 100.0 | 112 | 100.0 |

Table 4. Responses of county extension agents and of county agricultural committee members with respect to the role
of the committee in preparation of the extension budget

| In preparation of the county budget the county agr. committee should | Agr. agents | | County agr. committee | |
|--|-------------|-------|--------------------------|-------|
| | No. | % | No. | % |
| Take initiative or give specific sug- gestions or information on its preparation | 24 | 80.0 | 51 | 45.5 |
| Give approval or disapproval after it is prepared | 6 | 20.0 | 61 | 54.5 |
| No answer | 0 | 0.0 | 0 | 0.0 |
| Total | 30 | 100.0 | 112 | 100.0 |

Table 5. Responses of county agricultural agents and of county agricultural committee members with respect to selection of county office personnel

| In the selection of county office personnel the county agr. committee should | Type of agent | | | All agents | | County agr. committee | |
|---|---------------|------|-----|------------|-------|--------------------------|-------|
| | Agr. | Home | 4-H | No. | % | No. | % |
| Not concern itself | 4 | 3 | 6 | 13 | 14.4 | 5 | 4.5 |
| Give approval after selected by office staff | 21 | 16 | 16 | 53 | 58.9 | 94 | 83.9 |
| Take initiative or active part in selection | 3 | 7 | 3 | 13 | 14.4 | 10 | 8.9 |
| No answer | 2 | 4 | 5 | 11 | 12.3 | 3 | 2.7 |
| Total | 30 | 30 | 30 | 90 | 100.0 | 112 | 100.0 |

that they should "take some initiative" in the matter. The agents' responses were more widely distributed. Here then is an area in which there is less concensus among the agents than among the committee members.

SUMMARY

County agricultural committee members tend to hold to a more traditional view of extension work than do the county extension agents. They view the agents more as "generalists" who are able to provide information on a wide variety of topics and who advise and even become functionaries of groups and associations in the county. They look to the agent as an action person, organizing, co-ordinating and serving groups as well as providing the technical information. This suggests that much educational work needs to be done with the local sponsoring body if it is to support the roles of the agents as they see them. Also, the local committee does not rate the newer types of projects, such as public policy discussions, consumer education, and marketing of livestock and farm products, as high as do the agents.

These observations suggest that the local committee tends to define extension work in terms of the needs and interests of people in the county rather than in terms of problems requiring action on sectional, state, and national levels. New areas of emphasis in the extension work are rated high by relatively few committee members. This means that

if these directions are to become an effective part of the work, state-wide or nationwide, they must be justified and interpreted to the local people. This is one of the problems arising from the nature of the organization of extension work in which state and national administration must be made to fit in with local support of programs at the county level.

The comparison of responses between the members of the county sponsoring committee and the extension agents reveals general consensus in the area of program planning but not in the area of the administration of the extension department in the county. The latter stems, no doubt, from the fact that there are three levels of support as well as from the fact that the relationship between the committee and the paid professionals at the county level is not clearly defined.

Research Notes

FACTORS ASSOCIATED WITH THE ACCEPTANCE OF HEALTH CARE PRACTICES AMONG RURAL FAMILIES*

IN recent years considerable research has been done on the acceptance of recommended farm practices.¹ However, little has been done to apply the conceptual framework developed from this research to other areas of human behavior. The logic of the growing body of theory would appear to be in terms of the utilization of new ideas regardless of the specific field of application. If this assumption is sound, it would seem that those factors which have been found to be associated with the adoption of technological changes in agriculture would also be associated with the acceptance of recommended health care measures by rural people.

The following general hypothesis was tested in the study: There is an association between indices of social and economic status and the adoption of recommended health care measures by rural people.

In this exploratory study, the general procedure consisted of constructing an index of adoption of recommended health care measures, which was considered to be the dependent variable. This index was then related to a series of social and economic independent variables. The items of the index will be discussed in greater detail below.

RESEARCH PROCEDURES

Source of data: Data for this paper were obtained from a study being made by the Department of Rural Sociology at North Carolina State College in co-operation with the Agricultural Marketing Service, USDA, of the availability and use of health care services. The locale of this study was two rural Piedmont counties in North Carolina, namely, Stokes and Montgomery. Neither county contained an urban center. Each had a health department and a fairly new hospital.

*This paper is published with the approval of the Director of Research as Paper No. 862 of the Journal Series of the North Carolina Agricultural Experiment Station.

¹The reader is referred to the following bibliographies which list the major publications on the acceptance of farm practices: Subcommittee on the Diffusion and Adoption of Farm Practices of the Rural Sociological Society, *Sociological Research on the Diffusion and Adoption of New Farm Practices* (Kentucky Agr. Expt. Sta. RS-2; Lexington, June, 1952); National Project in Agricultural Communications, *Research and Writing on Diffusion of Farm and Home Practices* (East Lansing: Michigan State University, March, 1956); North Central Rural Sociology Committee, *Bibliography of Research on Social Factors in the Adoption of Farm Practices* (Ames: Iowa State College, April, 1956).

A random sample of households was drawn by the Department of Statistics at North Carolina State College. Data were obtained for 611 sample households by means of personal interviews conducted by graduate students in rural sociology. The field work was completed during November and December of 1956.

Index construction: The index contained ten items which are generally recommended as desirable health care measures. The index was actually conceived after the data had been gathered for another study. Therefore, the ten items in the index were selected, on the basis of their applicability to the problem at hand, from a small group of items which were already available.

The individual items and the scoring procedure for each item of the index are as follows:

| <i>Recommended health care measures</i> | <i>Scoring procedure</i> |
|---|---|
| 1. "Where do you get advice or information about keeping in good health?" | Recognized medical sources such as doctors, nurses, health department, or some official health publication received a positive score. Nonmedical sources such as relatives, friends or neighbors received a negative score. |
| 2. "Has any member of your family ever used the health department?" | A positive score was given for an affirmative reply. |
| 3. "Have you or other household members had any dental checkup or examination during the preceding 12 months?" | A positive score was given for a checkup not obtained in connection with other dental care. |
| 4. "Has any member of your household been seen or advised by a public health nurse during the last 12 months?" | A positive score was given for an affirmative reply. |
| 5. "Have you or other members of this household had a physical checkup or examination during the preceding 12 months other than in connection with an illness or accident?" | A positive score was given for an affirmative reply. |
| 6. "Did any of your household have a chest X-ray during the last 12 months?" | A positive score was given for an affirmative reply. |
| 7. "Did any members of your household have typhoid shots during the last 12 months?" | A positive score was given for an affirmative reply. |
| 8. "Have any of the children in the household under 5 years of age had the following immunizations and vaccinations: whooping cough shots, diphtheria immunization, tetanus shots except for injury, vaccination for smallpox?" | Credit was given if any child under 5 years of age had received one or more immunizations. |

*Recommended health
care measures (cont.)*

9. "Has any member of your household ever had one or more polio shots?" (This analysis included only those persons from 6 months to 20 years of age.)
10. "For how many children did you (the mother) get prenatal care?" (The question was screened to obtain information on those babies born during the past 5 years.)

Scoring procedure (cont.)

A positive score was given if any member from 6 months to 20 years of age had received one or more polio shots.

Credit was given if prenatal care was received for any one or more babies.

Obviously some items in the group did not apply to all households. For example, some households did not have children under five years, so they could not react to those items on immunizations. The items on polio shots and prenatal care likewise were not applicable in many instances. Therefore, in order to arrive at a score which would be approximately comparable for everyone, the index was arrived at by counting the number of positive replies (which represents adoption) and dividing this score by the number of items applicable. This score was then multiplied by 100 in order to round the scores to whole numbers. It should also be pointed out that a "don't know" response was given a zero score, since it was considered to be an indication of a lack of conscious, positive action on the part of the respondent.

ANALYSIS OF RESULTS

Each of the independent variables (occupation, age of male head, age of female head, education of male head, education of female head, social participation score, socioeconomic status score, color, and tenure) were subdivided along conventional lines. For each class within an independent variable, two statistical measures were examined. These were: (1) the frequency distribution of adoption scores; and (2) the median adoption scores. Between class, comparisons within each independent variable were made for each statistic.

Chi square was used to test the hypothesis that each class represented a sample drawn at random from a homogeneous population. This hypothesis was rejected for the first eight independent variables mentioned. In each of these cases the probability that a chi square value this large or larger could have been obtained by chance alone is less than .001, indicating that the frequency distributions differed from class to class within each of these eight independent variables.

For two of the independent variables, color and tenure, there was no evidence to indicate that the differences in the distributions between white and nonwhite and owner and renter were anything more than sampling fluctuations.

Although no formal statistical tests were used, an examination of the median scores by class tends to confirm the conclusions brought out by the analysis of the frequency distributions. The median for all 611 households was 37.2. Each independent variable will be considered separately.

Occupation of household head: Those households with heads having clerical and kindred work as major occupation had the highest median adoption score in health practices (53) and those with heads in professional and managerial

work were very similar in adoption score (52). Next to these groups were skilled and semiskilled workers and then common laborers and farm operators. Those households in which the head's major occupation was housewife had a median adoption score of only 16.

Age of male head: The median adoption score was highest for households whose male head was in the 35-44 age category. Those 25-34 years were very similar in score (49) and then were followed by those in the 45-54 age group with a median adoption score of 42. Those households with lowest median score (16) had heads 65 years of age and over.

Age of female head: Those households with female heads 25-34 and 35-44 years of age were similar in median adoption scores, 52 and 50 respectively. Like the older male heads, the households having female heads 65 years and over had lowest median score (14) in adoption of health practices.

Education of household heads: There was a positive association between education of the male head and also of the female head with median index score of adoption of recommended health practices. Those households with the female head having under 5 years of formal schooling had a median score of 25 while those in which the female head had one or more years of college had a median adoption score of 54.

Social participation.² There was a marked and consistent relationship between social participation scores of households and their adoption scores. The range was from a median adoption score of 34 for households with participation scores of under 10 to an adoption score of 54 for those having social participation scores of 25 and over.

Income: Adoption scores increased as income increased. Those households with net cash income of under \$1,500 had a median adoption score of 28 while those with incomes of \$4,000 and over had the considerably higher adoption score of 52.

Socioeconomic status.³ Those households with socioeconomic scores of under 70 and 70-79 were alike in having adoption scores of about 33. There was an increase in median adoption score (50) for the highest status households.

Color: The data showed only a slightly higher median score for nonwhite (39) as compared to white households (37). This is, of course, an unexpected finding. Although a detailed analysis has not been made as yet, there are several possible explanations, all of which should be explored.

Home tenure: There was no difference between the scores of home owners and renters. The median adoption scores for both tenure groups were 37.

IMPLICATIONS FOR FURTHER RESEARCH

The study points up the applicability of the developing body of theory and method in one area of technological change to changes in human behavior associated with health care practices. The agreement of the findings in these two seemingly unrelated areas of human behavior point toward the application of this approach to other areas of social change.

An item analysis and further field observation are needed in order to select the more differentiating items. For example, a preliminary examination has

²The Chapin Social Participation Scale.

³Socioeconomic status was measured by the short form of Sewell's socioeconomic status scale. See William H. Sewell, "A Short Form of the Farm Family Socio-economic Status Scale," *Rural Sociology*, VIII (1943), 161-170.

shown that prenatal care, use of the public health department, and use of the public health nurse were among the least differentiating items. These three items could have been eliminated without affecting the results appreciably. On the other hand, physical examinations and dental checkups are examples of items which varied considerably from one group to the other.

Explanation is needed as to why certain health care measures have been more highly accepted than others and why the acceptance of certain practices varies from one social group to the other and yet with others differs little from group to group. A research program connected with an on-going action and/or educational program would offer an excellent approach to these questions.

A brief analysis of the index suggests a word of caution in future research of this kind. The index included two items in particular which are not actually specific practices. For example, the use of the public health service and being seen or advised by a public health nurse are not in themselves recommended practices. They merely represent sources through which certain specific services may be obtained. The important thing as far as the adoption of a recommended practice is concerned is not where the service was obtained but rather the fact that it was obtained.

The inclusion of items such as these also results in a duplication of items in some instances. For example, one person may have certain immunizations at the public health service and another at the doctor's office. There is no logical justification for giving one of these people double credit for having obtained his immunizations at the public health service. The important thing is whether or not they were obtained.

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A SEPARATE CENSUS TABULATION FOR AMERICAN VILLAGES*

IN the 1950 Census a separate tabulation was made of places with 1,000 to 2,500 inhabitants by race, age, sex, and residence of the population. The Bureau of the Census is considering a similar tabulation in the 1960 Census of places with 500 to 1,000 inhabitants.¹ All the proposed additions desired by census users cannot be made because of limited funds. Therefore, it seems worthwhile to investigate the utility of such data for census users. Since the authors of this paper could devote only a small amount of time, and since

*The urban sociology students at Gustavus Adolphus College in the spring of 1957 gathered the data for Minnesota villages. The students in the class in theory and methods of social research at Gustavus Adolphus College in the fall of 1957 evaluated the original research report and made a number of constructive criticisms that have been incorporated here.

¹This proposal was made at a joint session of the American Sociological Society, Rural Sociological Society, and American Statistical Association, "Planning for the 1960 Census," in Detroit, Sept. 7, 1956, by Howard D. Brunsman, Bureau of the Census.

research funds were nearly nonexistent, they limited their investigation to two questions. What data for Minnesota would be made available if the proposed separate tabulation is made? What are some of the uses of this type of information for social scientists within and without the United States?

At this time there is no way of identifying the Minnesota places that will have 500 to 1,000 inhabitants on enumeration day in 1960. It is possible, however, to identify the Minnesota places of this size in 1950, to find out how many places there were of this size and what proportion of the Minnesota population resided in these places. It is also possible to estimate whether the number of places of this size and the number of people living there have increased or decreased since 1950.

In 1950 there were 145 places in Minnesota with 500 to 1,000 inhabitants.² Table 1 shows that the smaller places were more numerous than the larger ones. Table 2 shows that 70 of the 87 counties had one to six villages of this size. The distribution of these villages exhibited a general correspondence with

Table 1. Number of Minnesota places of 500-999 population in 1950 by size

| Size of place | Number |
|-------------------|--------|
| 900-999 | 13 |
| 800-899 | 25 |
| 700-799 | 29 |
| 600-699 | 36 |
| 500-599 | 42 |
| <hr/> | |
| Total | 145 |

Source: U.S. Bureau of the Census, 1950 *Census of Population*, Vol. II, pt. 23, "Minnesota," Table 7, pp. 26-29.

Table 2. Number of Minnesota counties with a specified number of villages in 1950

| Number of villages | Number of counties |
|-------------------------|--------------------|
| 6 | 1 |
| 5 | 3 |
| 4 | 6 |
| 3 | 12 |
| 2 | 20 |
| 1 | 28 |
| 0 | 17 |
| <hr/> | |
| All villages* | 87 |

Source: U.S. Bureau of the Census, 1950 *Census of Population*, Vol. II, pt. 23, "Minnesota," Table 7, pp. 26-29.

*Five villages were located in two counties.

An alphabetical list of these villages is given in Table 1 and a map showing their distribution is given in Figure 1 of a complete report of this study in the *Minnesota Geographer*, Oct., 1957, pp. 4-16.

population density except for a deficit of villages in the southeastern section and a concentration of villages northeast, west, and southwest of the standard metropolitan area of Minneapolis-St. Paul.⁵

It is not likely that the population of Minnesota villages has remained static since 1950.⁶ The population of the state has increased and the trend toward urbanization has continued. In addition, six of the communities incorporated since the 1950 Census enumeration had a population of 500 to 1,000 at the time of incorporation.⁷ To get some idea of the direction of population change in Minnesota villages since 1950, the village clerks and postmasters of places with 450-549 or 950-1049 inhabitants in 1950 or at the time of incorporation subsequent to 1950 were asked to estimate the current population of their villages.⁸ The estimates are summarized in Table 3. A majority of the Minnesota villages checked were reported to have increased in size. Only a few were reported to have remained static or to have lost population. Estimates were made by both village clerks and postmasters for 33 of the 67 villages checked. They did not agree on the direction of population change in ten villages. The accuracy of all of the estimates is, of course, unknown. Some of the estimators, however, mentioned that their figures were based on such items as lists of registered voters, building permits, and school censuses.

Table 3. Estimated changes in population of selected Minnesota places from 1950 to 1957

| Size of place | Number | Increase | Decrease | No change | Contra-dictory estimates | No estimate |
|---------------|--------|----------|----------|-----------|--------------------------|-------------|
| 1,000-1,049 | 7 | 6 | | 1 | | |
| 950-999 | 6 | 3 | | | 3 | |
| 500-549 | 25 | 13 | 4 | 4 | 3 | 1 |
| 450-499 | 29 | 18 | 2 | 3 | 4 | 2 |
| Total | 67 | 40 | 6 | 8 | 10 | 3 |

Source: Estimates received by correspondence from postmasters and village clerks in April and May, 1957.

According to these estimates no villages with a population of 500-549 in 1950 now have fewer than 500 inhabitants, but 16 villages with a population of 450-499 have passed the 500 mark. No place with a population of 1,000-1,049 in 1950 has lost population, but four villages with a population of 950-999 in 1950 have passed the 1,000 mark. Therefore, it is a reasonable

⁵For a map of population density see David E. Sopher's map, "Population Distribution, Minnesota, 1950," *Minnesota Geographer*, Dec., 1957, p. 7.

⁶For changes in the population of Minnesota incorporated places from 1940 to 1950 by size of place see Table 1 in Lowry Nelson, "The Outlook for the Small Town," in *Minnesota Trends* (Social Science Research Center of the Graduate School, University of Minnesota, 1954), p. 21.

⁷Letter from C. C. Ludwig, Executive Secretary of the League of Minnesota Municipalities, dated April 1, 1957.

⁸Five places of this size had no post offices.

hypothesis that the number of Minnesota places with 500 to 1,000 inhabitants and the number of people living there will be larger in 1960 than in 1950. Verification of this hypothesis awaits, of course, the 1960 Census.

In 1950 (as shown in Table 4) 101,505 Minnesotans lived in 145 villages with 500 to 1,000 inhabitants. This was only 3.4 per cent of the total population, but it was almost half of the population living in incorporated places with less than 1,000 inhabitants.⁷ In the judgment of the authors, a separate tabulation of villages in the 1960 Census would provide additional information for a sizeable number of places and people in Minnesota. For the United States as a whole, it would provide additional information for an even larger number of places and people.

Table 4. Population of Minnesota places by size in 1950

| Size of place | Number | Population | Per cent |
|-----------------------------|--------|------------|----------|
| 500,000 or more | 1 | 521,718 | 17.5 |
| 250,000-499,999 | 1 | 311,349 | 10.5 |
| 100,000-249,999 | 1 | 104,511 | 3.5 |
| 50,000-99,999 | 0 | 0 | 0.0 |
| 25,000-49,999 | 3 | 83,326 | 2.8 |
| 10,000-24,999 | 16 | 238,849 | 8.0 |
| 5,000-9,999 | 31 | 215,896 | 7.2 |
| 2,500-4,999 | 38 | 131,797 | 4.4 |
| 1,000-2,499 | 132 | 206,063 | 6.9 |
| 500-999 | 145 | 101,505 | 3.4 |
| Under 500 | 415 | 104,433 | 3.5 |
| Other rural areas | | 963,036 | 32.3 |
| Minnesota | 783 | 2,982,483 | 100.0 |

Source: U.S. Bureau of the Census, *1950 Census of Population*, vol. II, pt. 23, "Minnesota," Tables 2, 7.

American social scientists have many uses for a separate tabulation of villages of this size. In the United States, at least, villages with 500 to 1,000 population have a strategic location on the rural-urban continuum. They perform many important functions for rural communities. They are an integral part of metropolitan regions, and they have many urban characteristics, even though they are classified as rural. Students of rural and urban communities could study these groups with greater facility if additional information were given them. Students of population could more readily measure the redistribution of the American people and the differential composition of the population in communities of varying size.

Compilers and users of the statistical records of the United Nations could use these data, too. The Statistical Commission is concerned with providing comparable data. At present its classification of places by size includes a class with 500 to 1,000 inhabitants. The United States, Alaska, and the Panama

⁷U.S. Bureau of the Census, *1950 Census of Population*, Vol. II, pt. 23, "Minnesota" (Washington, D.C., U.S. Government Printing Office, 1952), Table 2.

Canal Zone are three of the political units that took a census between 1945 and 1954 without reporting the number of places with 500 to 1,000 inhabitants or the number of people residing in communities of this size.*

The United Nations publishes many statistics by rural-urban residence that are not comparable because of the diverse definitions of *rural* and *urban* made by different political units. There is great need for uniform definitions of these concepts, but much research will have to be done by the world's social scientists before uniform definitions can be devised. A separate tabulation of villages in the 1960 Census would facilitate this research.

Because there is no point in the continuum from large agglomerations to small clusters or scattered dwellings where urbanity disappears and rurality begins, the division between urban and rural areas is necessarily arbitrary. For the same reason, a standard definition for international adoption has not been attempted. Instead, it has been recommended by the Population Commission of the United Nations that countries obtain "the aggregate population of all identifiable agglomerations or clusters of population, classified by size and other characteristics so that the results may be used as far as possible to improve the international comparability of existing data on this subject."⁹

The many users of a separate tabulation of American villages would undoubtedly find data on the race, age, sex, and residence of the population insufficient for analytical study of rural and urban communities and of population composition and movement. The authors made no investigation of the most useful data that could be tabulated. They recommend, however, that the Bureau of the Census consider what data census users of a separate tabulation of villages would find most valuable.

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*United Nations, *Demographic Yearbook, 1955* (New York, 1955), Table 8. Algeria, Ghana, Union of South Africa, Japan, Malaya, Denmark, Farö Is., Czechoslovakia, and Portugal are the only other political units not reporting these data.

⁹United Nations, *Demographic Yearbook, 1952* (New York, 1952), p. 24.

Edited by WALTER C. McKAIN, Jr.

Book Reviews

Batten, T. R. *Communities and Their Development*. London: Oxford University Press, 1957. 248 pp. 15s net.

The field of this nontechnical but responsibly written book is suggested by the statement: "In studying community development, we are concerned with how communities can be developed from without, and by any agency, international or national, government or voluntary." One is impressed by the extent to which "the far-flung battle line" of Britain has been paralleled by sincere efforts to develop the community life of indigenous cultures over the world.

The author gives useful illustrations, most of all from Africa and tropical islands around the world, but also from community efforts with indigenous communities everywhere. He writes in considerable degree from firsthand experience or from direct contact with those who have had such experience, although he does not hesitate to make use of information from more distant sources.

The many descriptions of programs which were entered into with high hopes, but which were essential failures even where there had been elaborate preparation by professional sociologists, give a hint of the complexity of community structure and of the difficulty of improving it. The very large proportion of failures makes us aware that in the art and science of development of indigenous communities sociologists and social workers have scarcely entered the kindergarten. If every person, whether layman or Ph.D. professional, preparing for work with such communities, would carefully and thoughtfully read this book, a vast amount of expensive futility and frustration might be avoided. The bits of success which have emerged here and there in development of indigenous communities are indications that, while the field is a very difficult one, it is by no means hopeless.

Because of the fundamental likeness of people over the world, the lessons taught by this study are applicable to many community efforts in America. At the time of writing this, the reviewer is meeting, in a high-class American community, the same fundamental problems that are reported from mid-Africa and from remote little Pacific islands. Sometimes by seeing problems in other settings we may better recognize them at home.

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Beals, Ralph L., and Norman D. Humphrey, assisted by Ralph Arellano, Agnes Babcock, and Louis Stone. *No Frontier to Learning: The Mexican Student in the United States*. Minneapolis: University of Minnesota Press, 1957. xi, 148 pp. \$3.25.

This is one of the series of monographs on foreign students in the United States resulting from a broad program of research sponsored by the Committee on Cross-Cultural Education of the Social Science Research Council. This particular study is primarily one of acculturation. It is made apparent that it was found difficult to isolate personal from general cultural factors but the effort merits credit.

As a background the authors describe the social and cultural characteristics of Mexico in traditional anthropological terms. The middle- and upper-class urban subcultures are not given as much attention as might be expected since few of the students interviewed came from the state universities or smaller cities nor even from villages.

The reviewer, who has known many students from Mexico while they were in the United States as well as after their return home, cannot help thinking that this study would have benefited greatly if the authors had worked more closely with persons of extensive research background in the social sciences and if they had had more intensive experience or knowledge of the international student exchange field.

To indicate that Mexico is the largest Spanish-speaking country in area when Argentina is nearly 50 per cent larger does not necessarily reflect upon an author's competence in the field of social acculturation. But to imply that Mexico's present relatively large expenditure on archaeological research is a reflection of national attitudes towards ethnic heritage is to ignore the well-known fact that American tourists are a large component of the visitors to these sites and a principal source of the government income utilized to carry out studies as well as restoration.

Mexico is today much dedicated to both social and economic change. Students going abroad are undoubtedly important agents in bringing this about, but more should be known of the circumstances and personal idiosyncrasies that determine how this influence is felt and expresses itself. Student experience abroad deserves much more careful observation than it has been given in the past. The Social Science Research Council committee responsible for these studies recognizes this but felt itself handicapped by budgetary limitations. The committee and the authors have made a contribution in the publication of this book, which not only has value in itself but may also stimulate further study. An interesting comparison would be an evaluation of the experience in Mexico of students from the United States, a much more recent phenomenon but one which is becoming more frequent and is assuming varied forms.

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Clawson, Marion, and Burnell Held. *The Federal Lands: Their Use and Management*. Baltimore: Johns Hopkins Press, 1957. xxi, 501 pp. \$8.50.

Anyone who wants to begin thinking about desirable national policies in handling timber resources, dust bowls, watersheds, soil conservation, or water supplies must acquaint himself with the subject matter of this book. The federal government owns forest swamps, grass lands, and parks. What the nation has done and may do with these resources is a picture of our history and of our hopes.

Marion Clawson and Burnell Held, with a background of experience and study in this field, have prepared a helpful guide through the maze of federal land history and customs. They find an extraordinary variety of habits in different agencies. Secretary of the Interior Ickes, for instance, kept grazing fees low "in part as a means of convincing the Congress that the administration of these lands should be in the Department of the Interior rather than in the Forest Service."

Specialists will turn first to the reports of federal land policy affecting their own fields. Farmers will note that "only 4.5 per cent of all feed required for forage consuming livestock comes from federal lands, but for the west the figure is as high as 19 per cent."

A reader who is concerned with the debate over federal lands "escaping taxes" will turn to the chapter on "Revenues and Expenditures." In some cases, but certainly not in all, cash payments to local governments in lieu of taxes and payments in kind—roads, fire protection, etc.—come to more than would be received in taxes if federal lands were privately owned and taxed accordingly.

Since this book is a publication sponsored by Resources for the Future, the authors, after telling what is going on, also suggest what should go on.

Budget reform is one objective. When you run a national forest, you should be thinking in terms of the next one hundred years. But your budget is for the next twelve months.

How do you avoid the loss that comes from having a promising project cut off this year, revived two years from now, trimmed down in four years and thrown out again in six years? The damage done to military projects in this way has recently been given much attention. Federal land projects suffer in much the same way.

The authors ask for the establishment of a permanent federal land review board. This board would find out what is going on, analyze its findings and make recommendations. It would have no administrative powers; its job would be to give administrators, congress, and the public a guide through the maze of federal land policy. Until that board is established, administrators, congressmen, and the public might well study Clawson and Held's book.

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International Institute of Differing Civilizations (INCIDI). *Development of a Middle Class in Tropical and Sub-Tropical Countries*. Brussels: Leempoel, 1956. 467 pp. \$5.00.

This report summarizes the proceedings of the twenty-ninth session of the institute held in London in 1955. The participants included colonial officials as well as scholars.

Some two dozen countries receive attention, in many cases quite cursory. While political, economic, and social aspects receive attention in turn, there is no consistent coverage for the different areas. Indeed, most of the papers are rambling and discursive. Of special interest, however, will be the long section on French Africa.

While nominally students of stratification would be most likely to turn to this volume, it does have a wider use. It offers a guide to the kinds of social changes going on in underdeveloped societies and indicates new types of data for which a sociologist interested in comparative studies may profitably search in more comprehensive documents.

A sufficient body of data is presented in this volume to suggest that more carefully delimited and planned volumes for separate sections of the globe would be serviceable.

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Mueller-Deham, Albert. *Human Relations and Power*. New York: Philosophical Library, 1957. xxi, 410 pp. \$3.75.

This book is organized in four sequential parts dealing with Human Relations, Power and the Social Relations, Contributions to Political Theory, and Ethics and Sociology. The subject matter on human relations is handled by the use of a system of classification (positive relations-negative relations) which has its basis in the literature of sociology and philosophy and has implicit in it a thought-provoking logical structure; further elaboration is made in terms of relationships of unition ("we" feeling), reciprocity, and work-association. In commenting on power, the author takes the point of view that "power in its widest sense is a directed influence on its possibility and potentiality." The interplay among these three perspectives—one categorical, one with implications of dynamic relationships among people, and one dynamic in its connotation—is, in the reviewer's experience, an interesting aspect as it is developed throughout by comments on political theory and ethics.

The reader of this work is apt to find it more suggestive than definitive in its import but, nonetheless, worth consideration.

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Nadel, S. F. *The Theory of Social Structure*. Glencoe, Ill.: Free Press, 1957. xvi, 159 pp. \$6.00.

Nadel selects "role," intermediate to "individual" and "society," to deal with the processes whereby individual behavior becomes social conduct, i.e., the processes translating the qualities of the population into differential attributes exemplifying norms.

Written with deceptive British felicity, Nadel penetrates further into the intricacies of role structure and role linkages than any previous writer. (One could substitute "position" without altering his conclusions.) He not only dissects the elements of singular roles and the various sorts of linkages among these but also carries us far along the path of understanding the system that interlocks the sets of roles. There is nothing startling in this three-story approach; the incisive and at the same time discerning tracing-out of the qualities of these patterns is what the reader should concentrate upon.

To distinguish the situation allowing a priest to be a cyclist or not from the circumstance of his required celibacy is novice work. But Nadel's gift to us lies in his efforts to trace the kinds of social structures permitting, and resulting from, the systematic way in which these linkages may or may not occur. In the process he works out the special operations of "pivotal" traits in legitimatizing linked traits in different roles. Our usual class illustrations in discussing roles appear sophomoric when set beside this brilliant analysis.

It is heartening also to appreciate Nadel's freedom from cultural determinism. His formulation explicitly makes place for social-psychological treatment of congeniality of roles to individual nature, idiosyncratic performance, and the operations of roles as molderers of personality.

What seem to be dogmatic choices turn out to be fruitful distinctions. For example, Nadel stresses the separateness of the roles of daughter and daughter-in-law, and he emphasizes that "general role" is not some kind of composite but a salient role. But he goes further by tracing the structural implications of combining father with teacher, priest, labor supervisor, and the like as contrasted with situations where father does not also play these other roles. Thus a role has a correlative aspect relating it to a restricted set of alters while its autonomous aspects permit wider linkages.

Of particular methodological interest is Nadel's clear-headedness about the effects of abstraction upon conceptualization and his care in making clear his level of abstraction at each step. This care, also, enables him to thread his way through some of the most intricate questions pertaining to social dynamics.

This fresh approach to a tangled area of conceptual analysis may well come to be regarded as one of the most significant sociological treatises of this decade.

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Shannon, Lyle W. *Underdeveloped Areas*. New York: Harper, 1957. xi, 496 pp. \$6.50.

The great interest in underindustrialized or underdeveloped countries has begun to produce a considerable number of books. Most of these have fallen into two categories. The first is devoted largely to journalistic accounts of successful technical assistance missions with perhaps some attention to the reasons for success or failure or some summary of the principles that should govern efforts to help the less developed countries to lift themselves by their own bootstraps. The second category is concerned with more technical studies of economic development as such. Bingham's *Shirt-Sleeve Diplomacy* is representa-

tive of the first; Buchanan and Ellis' *Approaches to Economic Development*, of the second. The great bulk of the writing in this field, however, has appeared in journals, pamphlets, reports of international agencies, and the like. The task for those concerned with keeping abreast of this output has been considerable.

Professor Shannon's book, subtitled "A Book of Reading and Research," meets a real need. He has examined "about 200 different professional or scholarly journals, covering the last ten years, which contained about 2000 articles whose content made them pertinent to the subject." From a preliminary list of around two hundred of the most helpful articles, he has selected fifty by forty authors or agencies for inclusion in this volume. He has also covered the various aspects of the field in a systematic way. Because of the large number of contributions considered, the quality of the selections is high, and the unevenness in merit which frequently detracts from symposia is absent.

But *Underdeveloped Areas* is more than a book of readings. Professor Shannon opens each of the thirteen chapters with an essay of his own which gives the setting of the problem and integrates the contributions. All told he is wholly responsible for about one-fifth of the volume. In addition, the various contributions have been adapted rather than printed in their entirety. Thus duplications have been for the most part successfully and happily eliminated.

The opening chapter defines underdeveloped areas, considers their distribution, levels, and sources of income. Their political status and the rising tide of nationalism is considered with demographic characteristics following. Communication, mass media, and education come next. The discussion then turns to economic development, problems of capital formation and saving, and other problems, including the processes of increasing production. The debate as to the relative effectiveness of private enterprise and government in economic development is then aired. These chapters contain a considerable amount of pertinent research material. There follows what could be considered as Part II, beginning with a discussion of technical assistance and following with experiences in education and health and other attempts to effect social change. A final chapter considers the measurement of development.

The first word in Professor Shannon's book is "Sociologists" and they will be pleased that sociological considerations are not, as so often happens, neglected. Illustrative of the approach is the inclusion of Professor Horace Belshaw's "Some Social Aspects of Economic Development in Underdeveloped Countries in Asia."

The problem of the final choice of selections in a work of this sort, considering the large amount of material available, was obviously difficult. It has been well handled. Only one selection was mildly disappointing to this reviewer—that on communication and education. Here an instructor could well supplement the volume by using *The International Yearbook of Education* (Robert K. Hall and J. A. Louwerys, eds., [London: Evans, 1954]).

Unfortunately some of the figures in the table listing the population and area of the nearly two hundred political territories in the world somehow became scrambled, resulting in a few errors, only one or two of them serious. Professor Shannon has prepared an errata sheet which users should secure.

In sum, *Underdeveloped Areas* is a most welcome addition to the literature of the field because of its scope, its point of view, the high caliber of the

material, and the inclusion of competent and pertinent research results.

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Sills, David L. *The Volunteers*. Glencoe, Ill.: Free Press, 1957. xx, 320 pp. \$6.00.

The Volunteers is a rather interesting but somewhat involved analysis of the National Foundation for Infantile Paralysis. It is essentially a case study of this organization and its volunteer members. The data are based on studies conducted by the Bureau of Applied Research at Columbia University and the American Institute of Public Opinion at Princeton, New Jersey. The book seeks to answer, among others, the following questions: "Who are these Volunteers, and how did they initially become members of the Foundation? What do they do, and what satisfactions do they derive from their activities? What are the major rewards of volunteer participation? How do Volunteers actually perceive their organization, and what features of it do they single out as outstanding?"

To a researcher probably the most objectionable feature of the book is the fact that the author proceeds on the explicit assumption that the Foundation's program is successful and then goes about proving it. At some points this takes rather intensive exploration and interpretation of the data. Only one example can be cited here.

Chapter VI begins "documenting the assertion that the March of Dimes is a highly-successful fund-raising campaign" by comparing it with the campaigns of five other national organizations. The evidence presented is summarized in the following statement: "The most striking aspect of the data presented in Table 18 is that the Community Chest and the Red Cross Drive—in spite of their greater income—had fewer contributors than either the March of Dimes or the Christmas Seal Sale." If the objective of a fund-raising campaign is to see how many people one can get to contribute rather than how much money can be obtained, perhaps this is evidence of greater success.

Another disadvantage is the rather involved style of presentation. In Chapter III, for example, one loses the train of thought in trying to follow the organization of the material. This is complicated by the fact that there are two sets of footnotes, both at the bottoms of pages and at the end of the book.

The study, however, does lay bare a number of hypotheses which will be useful in guiding future research on voluntary organizations.

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Snider, Clyde F. *Local Government in Rural America*. New York: Appleton-Century-Crofts, 1957. xi, 584 pp. \$6.50.

The sparsity of comprehensive studies of local government in rural areas has handicapped students in this important field. This book provides an excellent text for students of rural government and is also a valuable reference for all who are concerned with this vital part of American life. The multiplicity of

articles and reports dealing with specific problems in local government testify to the widespread interest in the subject and to the belief that reforms are needed.

The author has grouped the subject matter into six parts (twenty chapters) as follows:

Part I. Historical and legal foundations of local government organization in the United States, including changes and the present complexities of local units.

Part II. Organization of the various kinds of local government units (counties, municipalities, towns and townships, special districts), problems encountered in their operation, and their relation to state and national governments.

Part III. Popular control through elections and party politics, internal organization, and powers of local units.

Part IV. Functions—services performed by local governments, including local courts, law enforcement, highway development, provisions affecting health, housing, public welfare, and education, and the administration of agricultural programs.

Part V. Fiscal policy and administration—increasing demand for services resulting in rising costs in spite of more state and federal aid.

Part VI. Reorganization—problems relating to (1) area, (2) internal organization, (3) allocation of functions, (4) state-local relations, and the prospects for improvements.

The author summarizes the things which would seem to deserve consideration in any program for readjustment of local government areas in rural America:

1. Geographic consolidation of units within a particular class, such as counties or school districts.
2. Elimination of the midwestern township as a governmental area, with transfer of its functions to the county.
3. Reorganization of individual counties, towns, or townships, with transfer of their functions to neighboring or overlying governments.
4. Elimination of some nonschool special districts, with the powers now exercised by such districts being conferred instead upon appropriate general government units.
5. Transfer of individual functions from smaller to larger units without disturbing existing political boundaries.
6. Co-operative performance of selected functions by pairs or groups of governmental units under various forms of functional consolidation.

He states, "We must abandon the idea that the degree of popular control over local government is directly proportional to the number of local units. Quite to the contrary, a simplification of local government, including the elimination of overlapping areas as far as reasonably possible, should actually foster democratic control and stimulate vigorous participation in local affairs." (p. 556).

The text is well documented with footnotes, references at the end of each chapter, and a general bibliography, preceding a 14-page index. Charts, tables, and maps illustrate the material.

This reviewer feels that the author has succeeded in presenting his material so that the reader will be prepared to work intelligently in the field of rural

government and, what is more, will be stimulated to help carry out some of the changes so urgently needed.

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*Agricultural Marketing Service
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Sower, Christopher, John Holland, Kenneth Tiedke, and Walter Freeman. *Community Involvement*. With Foreword by Charles P. Loomis. Glencoe, Ill.: Free Press, 1957. 323 pp. \$5.00.

This review is a compendium of a book which combines sociological theory, a report on a piece of research in the social action process, and speculation on the prevalence of interpersonal relationships within a typical Midwest county. The community involvement which the book reports was in a health survey. The survey, referred to in the book as a "self-survey," was conducted in what was known as Independence County. As a typical county it had a population of approximately 65,000 in 1950, with a county seat, Central City, having nearly 18,000 inhabitants. Almost 35,000 persons lived on farms and the remaining 12,000 were in six villages and towns scattered over the county.

The general sociological theory deduced in explanation of the research project was that the American democracy is founded on individualism, and because of this fact people living in various types of localities unite in collective action to meet their commonly perceived or felt problems. Moreover, any action program in any locality depends for its success on the prevailing thought patterns, the social structure, and the widely accepted idealism of both the particular community and the larger cultural area generally designated as a public. From the perspective of the professional participants the health survey reported was an experiment in scientific methodology and the furtherance of social action. As scientific researchers their conclusions are commendably impersonal.

The participants within the county setting up and promoting the study were the County Health Council, the County Health Department, the County Extension Service, the State Health Extension Specialist, the County School Office, the Pomona Grange, the District Nurses Association, the County Medical Society, and the County Civil Defense Organization. The two motivating groups among these were really the County Health Council and the County Civil Defense Organization. As one reads the account of the whole program, however, he gets a strong impression that the workers in these two groups were especially interested because they thought that a health survey would add to the prestige of their organizations in the county.

The five steps in the program were: (a) initiation, (b) organization (called legitimization) on the county level, (c) enlistment of co-operation at the community level, (d) execution of the survey, and (e) tabulation of results. The first step was effected by what was known as the initiation set. The prime movers in this set were professionals within the organizations listed above. Then the County Health Extension Specialist became a very important stimulator and adviser. Note that he represented an outside interest, the interest of the state in the general encouragement of public health practices. The accomplishment of the second step was done through personal relations within

formal organizations and institutions and the personal interests of the members of the initiation set. Then came the enlistment of co-operators on the so-called community level, that is, in the areas where the work of interviewing was to be done.

The organizations on the local level through which the data were collected fell into four types: (a) township-school district; (b) association, that is, some organization accepted the responsibility; (c) individual friendship-acquaintance; and (d) urban precinct, that is, an individual accepted the responsibility but depended on the general community loyalty for support. In no case was the unit of the survey a natural community about which rural sociologists have written much.

The limit placed on the length of this review makes it impossible to give adequate attention to both the positive and negative comments which should be presented. As to the former, the book is an excellent account of the social processes involved in effecting a scientific study to the like of which rural sociologists are inevitably committed. The findings reveal well how group activities rise and fall within a democratic society. The demise of groups is as much a part of the social action process as is their rise, and the rise is generally dependent on the collective solution of a common problem. It seems important to note that the success of the undertaking depended more on the face-to-face organizational and friendship relationships than on any other factor. Thus in the rural areas of the Midwest the face-to-face and confidence factor in human affairs is a long way from being dead.

The reader finds himself somewhat disappointed with the permanent effects of the study, for, practically none are now extant. Even the County Health Council, which had been a prime mover, died soon after the survey was finished. Thus, despite the fact that over 10,000 households in the county were visited in 23 different localities by 700 persons, no action program emerged from the questionnaires, which were even tabulated in the areas where gathered. Furthermore, it is well to remember that the survey started from the interest of professionals; it did not rise from the demands, or perceived problems, of the people.

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*Edited by LOUIS J. DUCOFF**

Bulletin Reviews

Adkins, William G. *Effects of the Dallas Central Expressway on Land Values and Land Use.* Texas Transportation Institute Bull. 6; College Station, Texas, Sept., 1957. 87 pp.

Increased concern with the problems of providing running room for America's sixty-five million motor vehicles has been accompanied by a revival of interest in the economics of highway planning and improvement. The Federal Aid Highway Act of 1956 has further stimulated this interest through direct provision for highway impact research and through generous appropriations for research in general into the problems of highway building.

Adkins' study of the Dallas Central Expressway is one of the most careful and detailed examinations of economic impact that has been published. Subtitled "A Study of the Influence of an Urban Expressway on Land Prices, Tax Valuations of Real Property, Land Use, and Attitudes of Businessmen and Residents Along its Route," it presents findings in each of these four categories.

Prices of land along the expressway are shown to have increased up to elevenfold between 1941 and 1955 as a direct result of the expressway. The size of the increase depended on distance to the expressway and whether or not the land was improved; land that was unimproved and abutted the expressway showed the largest percentage increase. Tax assessments followed a similar pattern, with the increases somewhat dampened by the customary lag in the adjustment of assessments to market values. Perhaps most notable of the conclusions regarding changes in land use was the slowness with which land has been shifted from the unimproved to the improved category. In the two major segments of land immediately adjacent to the highway (land annexed before 1941 and that annexed after 1946), 41 and 92 per cent of the area was still unimproved in 1955.

The opinion survey was based on interviews with businessmen and residents along the facility and included questions on the advantages and disadvantages of the expressway as seen by these people. Symptomatic of the state of highways in Dallas (and the nation) was the frequent listing by businessmen of "congestion" as the major disadvantage.

This reviewer considers the section on land price changes to be the most elaborate as well as the most interesting part of this study. The technique used by Adkins is to compare "before and after" sales prices of land "influenced" by the expressway with sales prices of comparable land outside the expressway's zone of influence. In both instances, the sales prices of land with improve-

*Assisted by Elsie S. Manny.

ments have been adjusted to try to remove the contribution of the improvements. The difference in sales price changes, either absolute or relative, is then attributed to the expressway. Obtaining sufficient data on sales, assessing their accuracy, making them comparable, and ascertaining that they are representative were only a few of the steps involved. Adkins has done a fine job of amassing and processing his data and has drawn from them as complete a picture of highway impact on land prices as has appeared.

But the bulletin raises several questions that are mentioned here mainly in the attempt to place in economic perspective this general type of research. The first question concerns the use of *current* prices in arriving at the major measure of highway impact developed in this study. To do this for a period of as rapid inflation as we have seen since 1941 exaggerates and distorts the changes in the price of land that can be attributed to the highway. Adkins' own attempt to correct for inflation (Method III, Appendix B) shows a considerably less dramatic impact and deserves more space and discussion than he has given it.

Second, and more fundamental, a careful examination of the purposes of this type of research and of the meaning and interpretation of the findings is needed. What, for instance, is the meaning of the comparison (p. 18) between total cost of the study segment of the expressway and estimated "total dollar influence of the expressway" on the value of land along it? Adkins wisely refrains from inferring anything definite from the comparison of his figures of \$13 million cost and the \$20 million to \$24 million rise in land values. But he also, however, refrains from discussing some of the questions raised by the juxtaposition of these two figures. Can these increases in land value be attributed to this section of the new highway alone, or do they depend partially on the fact that this section is part of a much bigger highway system? Is the increase in value a measure of net *social* benefit, or should it be reduced by the possible depressing effects of the highway on land values elsewhere in the city? Could another highway in the Dallas area or in some other city be expected to bring such large gains to landowners? These are some of the questions that must be explored before we can know what the results of even the most careful and detailed studies of this kind really mean.

WILLIAM C. PENDLETON

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Deacon, Ruth E. *Study of Methods for the Analysis of Family Financial Adjustments from Year to Year*. Cornell Univ. Agr. Expt. Sta. Memoir 347; Ithaca, N.Y., June, 1957. 40 pp.

The author has taken as her starting point the position that most expenditure studies, being limited to data for one year only, do not provide the basis for determining the methods of financial adjustment used by families in the face of economic change. Believing that information obtained from the same families over a period of years would lead to a more complete understanding of the factors affecting adjustment, she has worked with household accounts covering periods ranging from four to thirty-four years. Since the study, which is the basis for her doctoral dissertation, uses the records of only nine families, the bulletin is, as the title indicates, largely confined to a discussion of methods

of analysis. Findings of fact as to ways in which families adjust are held to a minimum and are in many cases such as have been substantiated in other studies.

This report uses the case study approach; in most of the tabulations data are presented separately for each family, in current and in constant dollars. The range in income, in total expenditures, in selected categories of expenditures, and the proportion of record-years in which families overspent income are given as background information. The relative merits of the various units of analysis, per capita, per ammain, and per fammain, are discussed and the per capita method selected as most useful.

Analysis is presented in terms of distributions of the record-years in which various relationships between income, expenditures (total or for selected categories), and changes in income or family size occurred. Measurement of elasticity is considered and rejected as producing meaningless relationships when income decreases. The use of regressions was not considered.

Considerable space is given to a discussion of the definition of income and the classification of expenditures. Since the nine records on which the study is based did not follow the same set of definitions, it was necessary to evolve a system of classification into which all nine could be fitted. It is well that the resulting system is discussed in some detail, for the classification used differs in many respects from the more frequently encountered classifications and is responsible for some of the relationships noted. Of particular interest is the fact that total expenditures in this study include not only consumption but also savings of a contractual nature, and that savings made irregularly as to time are not considered in the analysis. Failure to maintain consumption and savings as separate entities precludes the choice between consuming and saving from receiving the attention it merits in any study of family financial adjustments. However, because of the limited definition of savings used in the study, such an analysis would have little meaning here. An undetermined but undoubtedly significant proportion of total savings must escape consideration since for many families savings are the residual after consumption, and for others savings, though planned, are made at irregular intervals either because of irregularity in the receipt of income or variations in the form the savings take.

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Hepple, Lawrence M. *The Church in Rural Missouri: Midway in 20th Century. Part I; Introduction.* Missouri Agr. Expt. Sta. Res. Bull. 633 A; Columbia, Sept., 1957. 39 p.

Coughenour, Milton, and Lawrence M. Hepple. *The Church in Rural Missouri: Midway in 20th Century. Part II; Rural Religious Groups.* Missouri Agr. Expt. Sta. Res. Bull. 633 B; Columbia, Sept., 1957. 156 pp.

These are the first two parts of a comprehensive social study of the church in rural Missouri. There are five other parts to follow dealing with the clergy, religious group action, a comparison of rural and urban churches, spatial and social relationships, and what rural people think of the church.

This study has been under way for five years; it was organized and conducted by the Department of Rural Sociology of the University of Missouri, with the co-operation of the Bible College of Missouri, and received financial support from the Rockefeller Foundation. The research is a group product; it was carried out by a number of workers under the general chairmanship of Charles E. Lively as head of the study's technical committee, serviced by an editorial committee, an advisory committee, a field staff, and field investigators.

The study deals with the sociology of religious plurality patterns, centering upon social relationships, group characteristics of religious bodies, and degree of institutionalization that obtains; in short, the local church is dealt with as a sociological group.

Part I explains the need for a state-wide study, and sets forth its scope and method. It is based on a sample of ninety-nine rural townships, one-eighth of the total, and so provides data representative enough for over-all generalizations.

European backgrounds of the rural churches in Missouri are discussed; how these transplanted churches were affected by frontier conditions, by the War of Independence, by other relevant historic considerations, and why the Baptist and Methodist denominations were best fitted organizationally to meet frontier conditions. Attention is given also to the role of the Great Awakening in the eighteenth century, how revivalism persists in most rural churches, and factors related to the emergence in the late nineteenth and early twentieth centuries of sect-type religious groups as contrasted with the older church-type.

Rural churches were more numerous a half century ago, about as close together then as one-room schoolhouses, reflecting the poor roads and limited transportation facilities of the time, the people's belief that population increase would continue, and the evangelistic enthusiasm of circuit-riding ministers. Keen competition between church groups, especially the Baptists, Disciples of Christ, Methodists, and Presbyterians, often resulted in one church after another being built in the same locality. The question of slavery resulted in divisions within some denominations.

Part II presents many facts about religious groups in the sample areas as to numbers, distribution, and general social characteristics. In general, there are a little over five religious groups per township; nearly three-fourths of these groups are of the church-type, and the remainder of the sect-type. About two-thirds of the churches are in the open country, a fourth in villages, and an eighth in larger villages. The churches average sixty-four years of age, with the church-type older than the sect-type groups. The average size of all rural congregations is just under one hundred, 55 per cent of the membership is female. Open-country churches are smaller than those in villages. There are numerous facts about intergroup and intragroup relationships, with comments on the limited interdenominational activities and the various kinds of groups centering around the rural church—the Sunday school, women's organizations, youth organizations, choirs, men's clubs, and so on, with many a rural church having only a Sunday school. Church suppers are the most common social activity.

There are detailed figures on church property and finances, separate discussions of small, medium, and larger religious groups, with differences shown between church-type and sect-type groups.

Anyone interested in the sociological aspects of rural churches will want to read these first two sections of the seven-part study, *The Church in Rural Missouri*.

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Koos, Earl Lomon. *They Follow the Sun*. Bur. of Maternal and Child Health, Florida State Board of Health, Jacksonville, 1957. 55 pp.

In 1954 Earl Koos was retained by the Florida State Board of Health (under a Children's Bureau grant) to conduct a study of some of the agricultural migrants who "winter" in or near Palm Beach County, Florida, and move from there each year in search of work. *They Follow the Sun* is a brief report of that study.

The objectives of the investigation were (1) "identification of the migrants' problems," and (2) explanation of "why the migrant reacts as he does" to such health and welfare services as are offered.

The sample consisted of a single labor crew of 547 individuals comprising 202 households. The subjects were studied over a period of twelve months (i.e., a complete annual migration cycle). Data were obtained by a field investigator, a public health nurse, and a Negro participant-observer who secured employment as a member of the labor crew studied.

Koos discusses briefly the general characteristics of Atlantic Coast migrant workers and their relation to communities where they seek work. He emphasizes that, even in communities which are totally dependent on the services of migrant laborers, the workers are rarely considered to be anything but necessary visitors. They lack legal residence and are thus ineligible for many health and welfare services; they take no part in the social life of the communities they visit, and communities ordinarily refuse to make available to them their educational, health, and recreational facilities.

The subjects of this study were described in terms of geographic, occupational, and social origins. Typically, they were rural Negroes from the "deep South" who came into migratory labor from agriculture, where they had formerly been tenants, share croppers, or laborers. Characteristically, the crew members were relatively young (only one-fifth were thirty-five years or older), with a significant excess of females in the older age groups. The adult crew members had a mean educational status of slightly over five years, and their children tended to be one or two years behind their age group in school. Most (92 per cent) had no legal residence anywhere. The average number of years spent in the East Coast stream by all migrants twenty-five years of age or older was 4.7 years. Most had entered migrant labor because they had lost their agricultural jobs in their home states.

Koos devotes the bulk of his report to a discussion of the "problems which migrants encountered during the twelve months of observation." Koos fails to present his criteria for defining an event as a "problem." For example, is failure to carry insurance coverage perceived as a "problem" by migrants themselves, by employers, by service agencies with whom migrants have contact, or only by the investigator?

The author discusses several categories of "problems" which face migrant

workers: (1) problems of employment, erratic work opportunities, and low wages; (2) problems in traveling; (3) lack of financial and job security; (4) poor housing and overcrowding; (5) child care; (6) poor educational opportunities; (7) "special" attention by police and courts; and (8) health and medical care.

The report suggests ways of approaching some of these problems. For example, a need was expressed for better integration of health and welfare services on both local and interstate levels. Specific projects (provision of day care for children, working with crew leaders) were suggested as "points of entry," that is, ways of "getting to" the migrant in an effort to help him solve his problems.

They Follow the Sun is a tantalizing presentation which leaves the reader with a whetted appetite for further details. It is hoped that a fuller account of this interesting and practical study will be forthcoming.

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Straus, Murray A. *Direct, Indirect, and Disguised Measurement in Rural Sociology*. Washington Agr. Expt. Sta. Tech. Bull. 26; Pullman, Aug., 1957. 29 pp.

Increasingly during recent years it has become apparent that many practical research problems of rural sociology are special applications of theoretical research problems of the general behavioral sciences. Such rural sociological problems as the differential acceptance of economically rational farm practices, the factors influencing the migration of farm people, the analysis of educational change in rural areas, as well as others are yielding to the methods developed in anthropology, sociology, and psychology. Techniques developed in each of these areas, therefore, are of importance to rural sociologists. However, rural sociologists have better knowledge of the methods of some fields than of others. Among them, the methods of psychology—doubtless the field with the greatest variety of codified research techniques—are probably the least well known to rural sociologists. For this reason, Straus's concise bulletin, which brings to the attention of rural sociologists "certain as yet rarely used direct, indirect, and disguised techniques for the measurement of attitudes, values and personality," is indeed a useful addition to the literature.

The main elements of the bulletin are three: a classification of psychological research techniques, a description of specific psychological research techniques, and a brief summary of factors to consider in deciding upon psychological research techniques. Building upon previous authors, Straus classifies the techniques he reports upon according to their degree of *voluntarism*, *disguise*, and *structure*. Regarding voluntarism, a technique is called *direct* if it depends upon the respondent's self-evaluation, and it is called *indirect* (also called *projective*) if it does not. Regarding *disguise*, a technique is called *apparent* (also *visible*) if the respondent can perceive its true purpose, and it is called *concealed* (also *disguised*) if he cannot. Regarding *structure*, a technique is called *free* (also *open*) if the respondent is allowed to verbalize his responses in his own way, and it is called *fixed* (also *structured*) if he is expected to answer according to prescribed categories. The use of these criteria of classification leads to eight types of psychological research techniques: *direct-apparent-free*,

direct-apparent-fixed, direct-concealed-free, direct-concealed-fixed, indirect-apparent-free, indirect-apparent-fixed, indirect-concealed-free, indirect-concealed-fixed.

In Appendix A (pp. 28-29) each of a number of research techniques is classified according to the type to which it belongs. In the text, however, the structure dimension is not used. Instead, the main emphasis is upon visible-indirect (here called projective) techniques, disguised-indirect (here called disguised projective) techniques, and disguised-direct techniques; and a lesser emphasis is upon certain visible-direct (here called direct) techniques. Among the visible-direct techniques available, Straus discusses the standard personality and attitude inventories, as well as objective tests of knowledge. The disguised-direct methods discussed are nonthreatening formats, interspersal of questions, the role discrepancy technique, Q-technique, disguised intelligence tests, and the forced-choice technique. The visible-indirect (projective) techniques discussed are picture interpretation, word interpretation, "play" situations, cartoon fill-in and sentence completion. The disguised-indirect (disguised projective) techniques discussed are error-choice, public opinion estimates, proverbs and humor, recall distortion, and empirical item selection.

Straus's list of references is extensive. There are 127 different works cited, including many drawn from sources generally unfamiliar to rural sociologists. This alone would make the bulletin useful to research sociologists interested in rural areas. It also includes citations to a number of rural sociological works in which psychological research techniques have been used. This, too, is useful bibliographical material.

The bulletin concludes with a list of factors to be considered when deciding whether to use psychological research techniques. These are (1) factors influencing the decision as to whether to use direct or indirect techniques, (2) the conditions under which the researcher needs to validate the techniques, (3) the need for planning for rapport, (4) the need for a careful estimate of the ability of the subjects to respond to complex techniques, (5) the importance of using techniques as tools, not as ends in themselves, (6) the importance of selecting instruments designed to measure the desired dimensions rather than others, and (7) the ethics of disguised questioning.

As it stands, this is a useful bulletin because of the system for classifying techniques, the summaries of the particular techniques, and the references. The author and the publisher deserve credit for having made these materials available to the rural sociological public. Even good publications often have their difficulties, however, and this one is no exception. The bulletin would be better if the eightfold classification had been used systematically throughout, if the terminology had been consistent, and if the theoretical descriptions of the classification criteria had been more explicit.

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Wilkening, Eugene A. *The County Extension Agent in Wisconsin—Perceptions of Role Definitions as Viewed by Agents.* Wisconsin Agr. Expt. Sta. Res. Bull. 203; Madison, Sept., 1957. 51 pp.

Following Wilkening's previous studies on farm families and farm practice

adoption, this bulletin is another important contribution to a more objective and systematic appraisal of co-operative extension work at a time when accelerating changes in its milieu are raising questions about the traditional role of the Extension Service and the need for change.

The bulletin summarizes more detailed analyses of three preliminary reports on recruitment and training of extension personnel; extension clientele and co-operating agencies; and program planning, local leadership, and county co-ordination. Objectives specified for the study are: (1) to describe the county agents' role as perceived by them, (2) to determine the degree of consensus among agents of each type (agricultural, home, and 4-H) and between types, and (3) to determine the extent of role fulfillment and associated factors. The criteria that all three agents must have been in the county one year or longer disqualified 41 of the 71 counties in the state and left out the less productive northern counties.

The method is descriptive and interpretive and utilizes "certain notions in role theory"—role behavior, role definition, role consensus, and role conflict—as organizing and analytical concepts. Consensus between agents of each type and between types, as well as relative degrees of role fulfillment, are compared for liked and disliked aspects of their jobs, major extension functions, subject matter taught, kinds of activities, ways of influencing people, and relationships to various levels in the extension organization and to other groups and agencies. Comparisons on the basis of relative rankings are highly qualitative. The author recognizes the need for developing more adequate quantitative indices of behavior.

The agents' roles, so derived, are complex, sometimes ambivalent, and show important differences because of age, length of service, previous experience, character, and orientation. Areas of agreement as well as disagreement on role definitions appear between agents of a given type and between the three types of agents. The differences between types are seemingly based on traditional differences in methods and clientele, relative status in extension administration and local county groups, length of service, and job aspirations. The likes and dislikes of the three types were similar but with some important differences, showing more consensus within the home agent group.

As the extension agent plans and organizes his work, his activities are complex and varied. Nine types of activities were considered in the study. Analysis of four of extension's general functions indicated considerable discrepancy between role behavior and role definition, but in specific types of activities fulfillment was better. The three groups of agents shared high agreement concerning desirable ways of influencing people despite wide differences in practice. There was more agreement among agents on theory (role definition) than on practice (role fulfillment). The author finds the degree of role fulfillment to be comparable for the three groups of agents but possibly less for 4-H agents. Local pressures and changing definitions of extension work seem to prevent the realization of greater role fulfillment by agricultural agents.

When obvious discrepancies between the goals and means of extension occur (such as the agent's belief that consulting and advisory work should receive more emphasis without the accompanying sense of need to spend more time on personal contacts), "it appears easier to change the goals than to change the means necessary for carrying them out." This reviewer believes the cause may be inappropriate planning procedures often seen by agents as "paper

"work" and considered irrelevant to program activities. The author mentions the need for relating methods and procedures to goals and functions in extension. The major obstacle is that techniques and procedures tend to become traditionalized and expected by people; changing them requires changing people's conceptions of the agent's role.

The three types of agents look to different groups and agencies for support. Various degrees of satisfaction were reported by agents in their relationships with state and county workers. Consensus was greatest among all agents regarding local staff relationships. The author concludes that the degree of role fulfillment of a person in a position subject to expectations at two or more levels, varies with his own personal orientation and with the degree of control over his activities. A number of his findings appear to support some aspects of reference group theory.

This study contains many implications for further research and should be helpful in extension's personnel training, program planning, and co-ordination of work. The most obvious implication is that a change in role definitions by extension administrators and supervisors is not enough to change local extension activities. Agents need help to change habits, to develop new skills, and to change local people's expectations.

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Edited by MARION T. LOFTIN

News Notes

COLLEGES AND UNIVERSITIES

Columbia University

Paul Lazarsfeld, professor of sociology at Columbia University, recently returned from Paris, where he delivered a series of lectures at various educational and cultural centers in the French capital. One of the nation's leading authorities on mass communications and public opinion, he attended a conference on the sociology of communications at the Sorbonne, University of Paris, January 17. He presented two lectures there, speaking on American attitudes toward radio and television. The conference was sponsored by the French Institute of Public Opinion and inaugurated an annual program of studies at the Centre d'Etudes de Radio-Television. While in Paris, Lazarsfeld also spoke at the Institute of Social Psychology and l'Ecole des Hautes Etudes, and took part in a colloquium at the Fondation Nationale des Sciences Politiques.

Following the Sorbonne conference, and on a grant from the Ford Foundation, Lazarsfeld went to Vienna and Warsaw, spending ten days in each city. The grant was awarded "to encourage interest in social sciences."

Born in Vienna, Lazarsfeld received his Ph.D. at the University of Vienna in 1924. He came to the United States in 1933 as a Rockefeller fellow. At Columbia since 1940, he is executive officer of the Department of Sociology and an associate director of the University's Bureau of Applied Social Research. He has undertaken several studies in public opinion and social research projects, and is the author of a number of publications in his field.

Lazarsfeld returned to Columbia in mid-February.

Cornell University

Robert A. Polson resigned as head of the Department of Rural Sociology at the end of January, 1957, to devote full time to teaching and research. Olaf F. Larson succeeded Polson as head.

W. A. Anderson was on sabbatic leave during the 1958 spring term.

Dr. J. Lenwood Edge, director of agricultural extension and research, Central Philippine University, held an appointment as visiting fellow during the spring term.

Emmit Sharp, University of Wisconsin, was appointed assistant professor August 1, 1957. Miriam Terry was appointed assistant professor and Robert Danley appointed instructor for 1957-1958. Philip Taietz, on sabbatic leave

during 1957-1958, received a Fulbright research award in the Netherlands for a study of the retirement adjustments of rural aged.

William Reeder is to teach in the Utah Agricultural College 1958 summer session. Howard E. Thomas will instruct in the six-week workshop in human development and human relations held at Cornell in co-operation with the National 4-H Foundation.

A study of physician recruitment by rural communities is being made by Bert Ellenbogen and Gordon Cummings with a grant from the Medical Society of the State of New York. A three-year study of seasonal agricultural labor has been initiated, financed in part by a contract with the USDA Agricultural Research Service and by a grant from the New York Joint Legislative Committee on Farm and Food Processing Labor. A long-time study in the sociology of health has been started, partly as a co-operative project with the USDA Agricultural Marketing Service. A grant from the Ithaca Planning Board is supporting a study of community problems directed by William Reeder. Cross-cultural study of occupational choices of youth in Japan and the United States by C. E. Ramsey and Robert Smith (sociology and anthropology) is being supported by grants from the Cornell Social Science Research Center and the Graduate School.

A comprehensive review of the department's research was conducted April 30-May 1, 1957, by a consulting group composed of E. A. Wilkening, University of Wisconsin; P. J. Jehlik, State Experiment Stations Division, ARS, USDA; Carl C. Taylor, Ford Foundation; and Robin Williams, Cornell.

Iowa State College

Ray Wakeley taught the second session of the summer term 1957 at Drake University. He is currently serving as chairman of a corn-belt states subcommittee Project NC-18, which this year will survey an Iowa corn-belt county with high rural out-migration, high level of living, and low industrialization to assess the impact of out-migration on community and county institutions. Wakeley has also been named as a staff member of the newly established Agricultural Adjustment Center at Iowa State College.

Ward Bauder, a social science analyst on the staff of the Agricultural Marketing Service, is located at Iowa State College to assist with research activities in the north-central region.

George Beal has been promoted to the rank of full professor. A new staff position in family sociology has been filled with the appointment of Lee Burchinal as an assistant professor. He has a three-fourths time research appointment in the Agricultural Adjustment Center and a one-fourth time appointment for teaching family sociology courses.

Amy Russell and John Harp have been appointed as research associates to assist with several research projects.

John Harp was the recipient of the 1957 Stokdyke Award, sponsored by the American Institute on Cooperation. This award is given annually for the outstanding M.A. thesis on economic or sociological analysis of problems related to co-operatives. His thesis was entitled "Differential Participation of Cooperative Members in Communities of Iowa and Manitoba." Joe Bohlen served as his thesis advisor. This was the second time in the five-year history of the award that a student of Iowa State College was selected.

George Beal and Joe Bohlen are continuing their study in co-operation with TVA related to the role of the dealer in adoption of commercial fertilizers. They are also continuing jointly on several other projects. These include "Patterns of Social Relations and Their Relation to Change," "Grocery Store Buyers' Attitudes toward Cooperatives," and "Attitudes toward Farmers' Cooperatives." They have just begun a study sponsored by Dow Chemical dealing with the relative impact of different educational techniques on the acceptance of new ideas and practices. George Beal is continuing his work on the impact of an extension caravan on the acceptance of new ideas. He is also co-operating on a national study of the participation of women in home-making study groups sponsored by the extension service.

A new research project supported by the Agricultural Adjustment Center at Iowa State College is being directed by Lee Burchinal. It is entitled "Farm Family Values Related to Farm Family Functioning and Change."

Michigan State University

John Useem has been appointed head of the Department of Sociology and Anthropology and will also serve as director of the Social Research Service and the Area Research Center. He replaces Charles P. Loomis, who has resigned as head but continues as research professor of sociology and anthropology.

Useem has been granted a sabbatical leave January 1 to December 31, 1958, to do research in India under the sponsorship of the Hazen Foundation. During his absence Charles A. Hoffer will be acting head of the department.

Edward O. Moe was in Costa Rica from June to November, 1957, at the Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica. While there, Dr. Moe worked on the evaluation of program planning and analysis in accordance with the Institute and Michigan State University agreement to develop sociology and anthropology in Latin America.

Julian Samora joined the department September 1 as assistant professor. He spent the past year in research dealing with the influence of culture on health practices among the Spanish-speaking people of Denver, Colorado. The study was financed by the Carnegie Corporation.

New appointments to the staff include: Donald Olmsted, who will do teaching and research in social psychology; William Faunce, who will teach in the department and devote part time to research in the Labor and Industrial Relations Center; Sheldon Lowry, who has a joint appointment in the College of Science and Arts and in the Agricultural Extension Service; and William D'Antonio, who has a joint appointment in sociology and anthropology and in the Social Science Department of the Basic College.

W. B. Brookover, who has been professor of social science and sociology, has assumed a new position as director of the Bureau of Educational Research in the College of Education. He retains his position as professor of sociology and anthropology.

Clyde McCone, David Westby, Norbert Wiley, Robert Haldane, William Jarrett, and Carl Jantzen have been appointed to graduate assistantships in the department.

Jack Preiss was on the staff of the National Training Laboratory in Group Dynamics, at Bethel, Maine, July 12 to August 15, 1957.

J. Allan Beegle taught at the National Institute for Rural Church Leaders held at Butler University, Indianapolis, Indiana, from July 2 to 19, 1957.

Richard Adams was in Guatemala during the summer, serving as a consultant to the Educational Mission of the International Cooperation Administration.

Charles Cumberland will be in Mexico and Richard Adams will be in Chile during the first six months of 1958. They will participate in the study of overseas programs of American universities that is being carried by the Michigan State University Institute of Research on Overseas Programs. The Institute was established at the University in January, 1957, as a result of a grant from the Carnegie Corporation of New York.

Richard Adams was in Puerto Rico in November, where he participated in a conference on the subject "Plantation Systems in the New World." The conference was sponsored by the Pan American Union and the Puerto Rican government.

Duane Gibson was in Pittsburgh, Pennsylvania, in August, where he served as a codirector of a two-week workshop on Intercultural Education. The workshop was sponsored by the University of Pittsburgh and the Pittsburgh Council on Intercultural Education.

Moreau Maxwell was appointed associate professor of sociology and anthropology and curator of the museum effective October 16, 1957.

Carl C. Taylor is serving as distinguished visiting professor of sociology and anthropology. He will be in residence during the winter quarter and will offer a graduate seminar.

University of Minnesota

Theodore Caplow has completed a study of faculty mobility among major universities under a grant from the Fund for the Advancement of Education. The results of the study will be published by Basic Books as *The Academic Marketplace* early next year. Reece McGee, now of the University of Texas, is coauthor.

George Donohue has been appointed extension rural sociologist with the Agricultural Extension Division.

John Forster, formerly of the University of California at Los Angeles, has joined the staff as an instructor in the Departments of Sociology and Interdisciplinary Studies. During the past year he has been on the island of Maui conducting a study on Hawaiian acculturation.

Reuben Hill, formerly of the University of North Carolina, joined the staff of the department in August of this year. Hill's appointment as professor of sociology and child welfare was made possible by a grant from the Louis W. and Maud Hill Family Foundation to be used in expansion of the teaching and research program in family life at the University of Minnesota. In addition to his teaching and research duties he has been named director of the Minnesota Family Study Center. Professor Hill has accepted an invitation of the International Sociological Association to prepare the "Trend Report on Research in Marriage and Family Behavior, 1945-1956," to be published by *Current Sociology* in 1958. He interpreted sociological research to the Round Table on Law and Family Stability of the International Association of Legal Science at the University of Chicago in September. In December, Hill

consulted with the staff of the Social Science Research Center, the University of Puerto Rico, and with government officials about the implications of his recently completed research with J. Mayone Stycos of Cornell University and Kurt W. Back of the University of North Carolina on family and population control.

Charles W. Martin is family relations specialist with the Agricultural Extension Service.

Lowry Nelson was in Brazil during the summer months as consultant for the International Cooperation Administration on a community development project in the pioneer area of the state of Paraná.

Henry Riecken was in Pakistan last spring as a consultant to the Survey Research Center of the University of Michigan under a research contract with the International Cooperation Administration.

Arnold M. Rose returned after a year as Fulbright professor at the University of Rome. He is editor of *Institutions of Advanced Societies*, being published by the University of Minnesota Press, in which the social structures of ten "developed" countries are described by sociologists living within those countries.

Professor Marvin Taves returned during the summer from a year's leave in Austria, where he lectured on social science research methods at the University of Graz under a Fulbright award.

Mississippi: The State College and the University

Willie Mae Gillis has joined the staff of the Division of Sociology and Rural Life, State College, as an assistant sociologist. In addition to handling the courses in social psychology, she is doing research on the Experiment Station project concerned with the adoption of farm practices. Gillis comes to State College from the University of Colorado.

The Tenth Annual Town and Country Church Leaders Institute was held on the State College Campus, January 20-22. The theme of the conference was "The Role of the School in Community Development." Next year's institute will have as its theme "The How of Community Improvement."

The Department of Sociology and Rural Life, State College, has been transferred from the School of Business and Industry to the newly created School of Arts and Sciences. Beginning with the fall semester, 1957, the department was authorized to begin a Ph.D. program in sociology.

The Department of Sociology and Rural Life, State College, has recently evaluated its graduate program and as a result is placing additional emphasis on training in research methodology. Three courses, including statistics, are required of first-year graduate students; a four-semester seminar in research methods has been added for advanced graduate students; and a continuing in-service seminar in research has been added for full-time staff. One or more staff members will take training in programming for the IBM 650 digital computer, which has recently been added to the campus statistical center.

The biennial joint staff meeting between the Department of Sociology and Anthropology at the University and the Division of Sociology and Rural Life at State College was held on the State College campus in March. Attending this meeting were sociologists from all the four-year colleges in Mississippi.

Ohio State University

A. R. Mangus is currently dividing his time between the Department of Sociology and Anthropology and the Department of Agricultural Economics and Rural Sociology. He spent the summer of 1957 as visiting professor of family sociology, University of Southern California.

Everett M. Rogers joined the staff in a teaching and research capacity after receiving his Ph.D. degree from Iowa State College in March, 1957. He is involved with Wade H. Andrews and Harold R. Capener in a research study of the communication of agricultural technology.

Robert M. Dimit is directing a study of membership relations in a major farm organization in Ohio in addition to his duties as extension specialist. The field work is completed, and analysis is under way.

Wade H. Andrews was named associate professor of rural sociology effective July 1, 1957. In addition to his teaching duties, he is directing a study of membership relations in milk producer co-operatives. John Clark, research assistant, has also been involved in this study and wrote his master's thesis on one aspect of the study. Clark is presently on a teaching assistantship in the department.

Wade Andrews, Everett M. Rogers, Harold Capener, and Ward Bauder (of the Agricultural Marketing Service) are collaborating on a study of the impact of industrialization on rural areas of Ohio. Over nine hundred field interviews have been completed in Noble and Monroe counties, where a 390-million-dollar plant is under construction by the Olin-Mathison Aluminum Company.

Wade Andrews and Saad Nagi and Raymond Klingel, research assistants, have been involved in a study of out-migration from a metropolitan center to the surrounding rural areas in Franklin County. The Ohio Agricultural Experiment Station project is being conducted in co-operation with the north-central region. The study is primarily concerned with the integration of the new community members and with the impact of the migrants upon churches, schools, and other institutions.

A new project has recently been developed with funds provided by the Ohio Heart Association. The study is directed by Wade Andrews and is concerned with the adjustment of family members when the farm operator is stricken by heart disease. Also co-operating on this project are the Department of Agricultural Engineering and the School of Home Economics.

Albert W. Orcutt is engaged in teaching and extension work.

Merton D. Oyler is jointly appointed in both the Department of Sociology and Anthropology and the Department of Agricultural Economics and Rural Sociology. In addition to his teaching responsibilities, he is engaged in a study of modernizing influences upon the Amish in Ohio. Oyler recently returned from a six month's leave in England, where he was engaged in a study of fringe communities.

Harold R. Capener is serving as leader in research for the Agricultural Extension Service. He is also on the staff of the Ohio Agricultural Experiment Station and is co-operating on several projects. He left for India in March for a two-year assignment on the Ohio State-India project.

J. P. Schmidt has recently returned from a two-year assignment in India

on the Ohio State-India project. While there, he introduced courses in rural sociology and extension methods at the Punjab Government Agricultural College. He also established an extension service in the college, using a block of one hundred villages for training college students as extension workers. Professor Schmidt was appointed professor emeritus January 1, 1958. He is presently aiding the Council on Rural Health, American Medical Association, and managed their conference at Jackson, Mississippi, March 6 to 8, 1958.

There are presently 67 graduate students enrolled in the Agricultural Economics and Rural Sociology Department at Ohio State. The department has a full-time professional faculty of 53 in teaching, extension, and research positions. In addition, there are 33 part-time graduate research and teaching assistants.

University of Wisconsin

The Department of Rural Sociology in co-operation with the general Department of Sociology and Anthropology is planning a symposium in connection with the retirement of John H. Kolb, May 8, 1957. The theme of the symposium is appropriate to his life-long contribution, "Frontiers of Community Research and Action." Notices are to be sent to all former students and interested friends and colleagues and all those interested in this subject are cordially invited to attend. Professor Albert J. Reiss of Vanderbilt and Professor Irwin Sanders of Kentucky have accepted invitations to deliver addresses, and Professor Rockwell Smith of Garrett Biblical Institute has consented to chair an evening banquet session. Kolb is preparing a monograph entitled "Emerging Rural Communities: A Review and Interpretation," to be published by the University of Wisconsin Press, based upon his research in group relations at the University of Wisconsin since 1910.

ANNOUNCEMENTS

The European Society for Rural Sociology was formed in Wageningen, the Netherlands, on November 29, 1957, at a conference attended by twenty-one representatives from thirteen countries in Europe. The new organization grew out of a recognition of the need for strengthening the position of rural sociology in Europe. Courses in rural sociology are at present taught in several European educational centers, but only at the Agricultural University at Wageningen does a full chair of rural sociology exist and can students select rural sociology as a major subject. There are few adequately trained research workers in the field. Furthermore, research and extension work have in the past tended to function outside of the frame of reference of modern sociological theory and research methods. The society will provide European social scientists with a channel for the stimulation of research and training in rural sociology and the interpretation of the role of rural sociology in the solution of rural social problems.

To carry out these objectives the following means are provided: (1) the holding of conferences; (2) the establishment of a documentation center; (3) international exchange of rural sociologists and students in rural sociology; (4) the publication of a journal in three languages—French, German, English. Among the types of membership voted by the society are corresponding members from non-European countries.

Professor Dr. E. W. Hofstee, head of the Department of Rural Sociology, Agricultural University, Wageningen, was elected president of the society. Members of the executive committee include Dr. H. E. Bracey (England), Dr. H. Gad (Denmark), Professor C. Hoyois (Belgium), and Professor M. Cepede (France).

Plans have been discussed for holding of the first conference of the society in September, 1958, at Louvain, Belgium.

National Training Laboratories this summer will conduct its Twelfth Annual Summer National Training Laboratory in Group Development at Gould Academy, in Bethel, Maine. For the past eleven years the Division of Adult Education Service of the National Education Association, Washington, D.C., has been serving our nation's growing need for practical, effective, and democratic leaders in all occupational fields by sponsoring this Laboratory.

Whether in industry, government, education, civic groups, or labor, research indicates that effective leadership depends on face-to-face working relations in small groups. The two three-week summer laboratory sessions at Gould Academy are devoted to more effective development of human relations knowledge, insights, and research on the part of various professional and volunteer leaders, and to development of ability to overcome resistances to change in organizational and community situations. The dates of these two sessions are June 15-July 4 and July 13-August 1, 1958. This year, three hundred persons will be chosen to attend—with 150 persons admitted to each of the sessions. The faculty includes persons from both educational and applied fields. This summer's faculty will come from such institutions as Columbia's Teachers College, the Universities of California, Delaware, Kansas, and Utah, as well as Boston, Michigan State, New York, Northeastern, and Vanderbilt Universities.

The purposes of this intensified training program are as follows: (1) to develop increased sensitivity to human relations situations, (2) to develop the ability to diagnose the causes of human relations problems, (3) to practice the problem-solving skills of an effective leader, (4) to study problems of inter-group relations and organizational conflict, (5) to plan for effective work in the community. This year the laboratory will go more deeply into the whole problem of community leadership training than in the past, as well as training for leadership in organizations and in staff, committee, and discussion groups. The combination of research, training, and democratic action is the cornerstone of the work of the National Training Laboratories, whose laboratory approach to training is rapidly gaining recognition in Europe, in South America, and the Orient, as well as in the United States and Canada.

For further information contact Mrs. Aileen Waldie, National Training Laboratories, 1201 16th Street, N.W., Washington, D.C.

Wayne State University's College of Education and Graduate School again approve credit arrangements in connection with the Eleventh Annual European Travel Study Program in Comparative Education. Personally directed by Dr. Wm. Reitz, professor of education, the group will leave Detroit on June 18 and return on August 28, 1958.

Visiting twelve countries during the 72-day journey, this program is designed to provide teachers, students, and other professional people with an opportunity to survey selected highlights of the life and culture of Western Europe. There are almost three hundred alumni of the past ten programs. Persons may

qualify to earn up to eight hours of undergraduate or graduate credit to apply on degree programs, for teaching certification, or for annual salary increments. Others may audit the program for purposes of personal enrichment.

The highlight of the 1958 program will be a two-week visit to Greece, including a five-day boat cruise among the Isles of the Aegean Sea (Rhodes, Kos, Patmos, Delos, and Mykonos) as well as Crete, a five-day bus journey to the classical and archeological sites of the Peloponnesus (Eleusis, Mycenae, Epidaurus, Sparta, Olympia, Corinth, and Delphi), climaxed by a full three-day visit to the monuments of the Golden Age of Athens.

Further information may be obtained from Dr. Wm. Reitz, 727 Student Center, Wayne State University, Detroit 2, Michigan.

Western Reserve University announces a research-oriented workshop on "Intergroup Relations" for social science majors, social workers, teachers, community organization workers, administrators, nurses, and police and hospital personnel from June 16 to July 26 to be directed by Marvin B. Sussman, John B. Turner, and Eleanor K. Caplan. The program is designed to help participants broaden their understanding of the social and psychological forces which cause intergroup conflicts in America and to analyze methods proposed and used in dealing with these tensions. In addition, the workshop will focus on research in intergroup relations. A group project is being planned to study the problems of housing for minority groups. Students may choose to work on this project or one of their own. Assistance and supervision will be provided by a research and consultant staff.

Areas covered in lectures and group discussions include the philosophical, social, and psychological aspects of prejudice; the history and present status of religious and ethnic groups in America; the legal approach to intergroup relations; a survey of relevant research studies and demographic indices of intergroup differences; and intergroup relations in community organization, power relations, religion, housing, and politics.

The workshop is available to those who qualify as graduate students. Successful completion of workshop requirements carries six semester hours of credit in the fields of American culture, psychology, history, and sociology at Western Reserve University. Credit will be granted in the Graduate School of Applied Social Sciences, and in the School of Education but not as a requirement for a teacher's certificate.

The workshop will be limited to forty students. Some part- and full-tuition scholarships are available. These have been donated to the University by the National Conference of Christians and Jews. Inquiries and registrations should be directed to Hollace G. Roberts, Director of Admissions, Western Reserve University, Cleveland 6, Ohio.

The Southeastern Conference on Latin American Studies announces the quarterly publication of a newsletter, *The Southeastern Latin Americanist*, beginning in September, 1957. Frederick E. Kidder, Apartado 82, Universidad InterAmericana, San German, Puerto Rico, is editor.

Carle C. Zimmerman has two copies of Volume I and one copy of Volume II of the *Systematic Source Book in Rural Sociology*, which are available at \$5.00 each. Anyone interested should get in touch with Zimmerman at Harvard University.

Annual Meeting of Rural Sociological Society

TENTATIVE PROGRAM

State College of Washington

PULLMAN, WASHINGTON

August 23-25, 1958

including

Joint Sessions with American Sociological Society

SEATTLE, WASHINGTON

August 27, 1958

Saturday, August 23, 1958

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| Registration | 9:00 A.M. |
| Meeting of Executive Committee | 9:30 A.M. |
| Luncheons for Committees | 12:30 P.M. |
| Interdiscipline Research—Section 1 | 2:00 P.M. |
| Rural Development—Section 2 | 2:00 P.M. |
| Role of Rural Sociology—Section 3 | 7:30 P.M. |

Sunday, August 24, 1958

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| Teaching of Rural Sociology—Section 4 | 9:30 A.M. |
| Extension in Rural Sociology—Section 5 | 9:30 A.M. |
| Research in Rural Sociology—Section 6 | 9:30 A.M. |
| Business Meeting—First Session | 1:30 P.M. |
| Recreational Evening | 7:00 P.M. |

Monday, August 25, 1958

Research Clinics:

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| Decision Process of the Farm Operator—Section 7 | 9:00 A.M. |
| Part-time Farming—Section 8 | 9:00 A.M. |
| Research Proposal for Designing a Sample of Communities —Section 9 | 9:00 A.M. |
| Farmers' Expenditures for Health and Medical Care—Section 10 . . | 9:00 A.M. |
| A Report on the Saskatchewan Royal Commission on Country Life —Section 11 | 1:00 P.M. |
| Business Meeting—Second Session | 3:00 P.M. |

Wednesday, August 27, 1958

Joint Meeting with American Sociological Society:

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| Agricultural Labor Force and Occupations—Section 12 | 10:00 A.M. |
| Rural Sociological Studies Abroad—Section 13 | 2:00 P.M. |



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PUBLISHED BY ATLANTA UNIVERSITY, ATLANTA, GEORGIA

Address all correspondence to: *Phylon*, Atlanta University,
Atlanta 14, Georgia

JOURNAL OF FARM ECONOMICS

Published by THE AMERICAN FARM ECONOMIC ASSOCIATION

Editor: ROBERT L. CLODIUS

UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN

VOLUME XL

FEBRUARY 1958

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| Meat Production in the U.K.: A Study of Government Policy..... | E. A. Attwood and G. Hallett |
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Membership is open to any person professionally employed in the field of rural sociology or who is interested in the objects of the Society, subject to the approval of the Executive Committee and the payment of annual membership fee of \$7.50. The student membership and emeritus fee is \$4.00 annually. Each member receives *RURAL SOCIOLOGY*, the official journal of the Society, at no additional expense. Send membership fees to:

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